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# ENVIRONMENTAL STATEMENT

FINAL

SIERRA PACIFIC POWER COMPANY  
230-345 KV TRANSMISSION LINE  
OREANA, NEVADA TO HUNT, IDAHO



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
NEVADA STATE OFFICE

MAY 1977

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FINAL  
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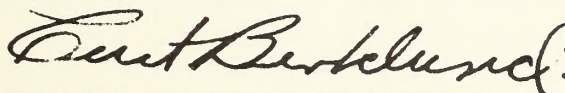
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SIERRA PACIFIC POWER COMPANY  
345 KV TRANSMISSION LINE  
OREANA, NEVADA TO HUNT, IDAHO

Prepared by

DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
NEVADA STATE OFFICE



Director, Bureau of Land Management

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## SUMMARY

Draft ( )                      Final (x)                      Environmental Statement

Department of the Interior, Bureau of Land Management

1. Type of Action:                      Administrative (X)                      Legislative ( )

2. Brief Description of Action: The proposed action is the construction of a 345 kv transmission line from Oreana, Nevada to Hunt, Idaho, across private and national resource lands; total distance involved is between 286 and 360 miles, depending on route selected. The proposed action includes the construction of one substation, upgrading two other substations, and the construction of new access roads and trails as needed.

3. Summary of Environmental Impacts: The proposed action will result in:

- an increment of damage to the soil and vegetation of between 276 and 843 acres, depending on route and method of construction.
- disruption of wildlife habitat (including the aquatic habitat) along the length of the transmission line.
- disruption of the visual and recreation resource values in sensitive areas along the length of the line.
- impacts to the social-economic structure of the study area.

4. Alternatives Considered:

- a. Alternate methods of construction.
- b. Alternative rights-of-way.
- c. No action alternative.

5. Comments Have Been Requested from the Following:

See list in Chapter 9, p. 9-4 .

6. Date Statement Made Available to CEQ and the Public:

Draft Statement: October 18, 1976.

Final Statement: JUL 11 1977

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## DESCRIPTION OF THE PROPOSED ACTION

INT-000000

Large tracts of land (mostly in the western half of the State) are owned by the State of Texas. These lands are owned by the State of Texas in severalty, in fee simple, and are subject to the same laws as other lands owned by the State of Texas. The proposed action is to transfer to the State of Texas, in fee simple, all lands owned by the State of Texas in severalty, in fee simple, and subject to the same laws as other lands owned by the State of Texas. The Department of the Interior, Bureau of Land Management (BLM), has been assigned the responsibility of carrying out the proposed action. The proposed action is to transfer to the State of Texas, in fee simple, all lands owned by the State of Texas in severalty, in fee simple, and subject to the same laws as other lands owned by the State of Texas.

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## FEDERAL ACTIONS

The Bureau of Land Management (BLM) is the lead agency for the proposed action. The proposed action is to transfer to the State of Texas, in fee simple, all lands owned by the State of Texas in severalty, in fee simple, and subject to the same laws as other lands owned by the State of Texas. The Department of the Interior, Bureau of Land Management (BLM), has been assigned the responsibility of carrying out the proposed action. The proposed action is to transfer to the State of Texas, in fee simple, all lands owned by the State of Texas in severalty, in fee simple, and subject to the same laws as other lands owned by the State of Texas. The proposed action is to transfer to the State of Texas, in fee simple, all lands owned by the State of Texas in severalty, in fee simple, and subject to the same laws as other lands owned by the State of Texas.

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# DESCRIPTION OF THE PROPOSED ACTION

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# 1

## DESCRIPTION OF THE PROPOSED ACTION

### INTRODUCTION

Sierra Pacific Power Company (incorporated in Nevada) and Idaho Power Company have filed an application with the Federal Government to construct a 345 kilovolt (kv) electrical transmission line. The proposed right-of-way would extend across private and national resource lands in a generally northeast direction from the Tracy electrical substation near Reno, Nevada, to the Hunt electrical substation near Twin Falls, Idaho. The Department of the Interior, Bureau of Land Management (BLM), has been assigned the responsibility of preparing the required environmental studies (Environmental Analysis Records - EARs, and/or Environmental Statements - ESs).

The Nevada State Office of the BLM has been delegated the responsibility of conducting the required environmental studies for the proposed right-of-way (or rights-of-way): (1) this document, an environmental statement (ES) covering the segment of the proposed line extending from Oreana, Nevada, to Hunt, Idaho, (2) an environmental analysis record (EAR) for the first 90 miles of the proposal covering the Tracy to Oreana, Nevada, segment of the line, and (3) an environmental statement (ES) on the proposed Valmy 500 megawatt (Mw) electrical power generating station and associated transmission lines. The rationale for evaluating the proposal in three separate parts is outlined in Appendix A, p. 10-1 .

### FEDERAL ACTIONS

The Bureau of Land Management action under consideration in this statement is a grant of right-of-way across Federal lands to permit construction of an electrical power transmission line. Prior to a decision to approve, disapprove, or defer action on the request for the right-of-way, two supporting documents must be prepared by the BLM. These are (1) an environmental statement pursuant to Section 102(2) (C) of the National Environmental Policy Act of 1969 (NEPA), and (2) a Land Report pursuant to BLM Manual 2063, which will make recommendations to management and outline courses of action for the specific realty transaction involved (in this instance, a right-of-way).



SUMMARY OF PERTINENT EVENTS AND OF THE FORMAL  
APPLICATIONS RECEIVED

Sierra Pacific Power Company formally notified the BLM of the proposed power transmission project by letter addressed to the Director of BLM on April 26, 1973.

On August 2, 1974, Sierra Pacific Power Company filed an application with the Bureau of Indian Affairs (BIA) for a transmission line right-of-way across the Pyramid Lake Indian Reservation. The Reservation is within the Tracy-to-Oreana segment of the proposed project.

On January 31, 1975, the company filed a formal letter of application with the Nevada State Office, BLM. This application, consisting of maps for the first 158 miles from Tracy Substation to Valmy, Nevada (and structure plans), was incomplete. On April 4, 1975, the company submitted the required environmental assessment for the entire right-of-way from Tracy, Nevada, to Hunt, Idaho, and on July 8, 1975, the right-of-way application within Nevada was completed with the submission of a right-of-way map for the Valmy to Idaho state line segment.

On September 30, 1975, the application was amended to consider the Tracy to Oreana portion and the Oreana to Hunt portion as separate, but related, rights-of-way.

On October 10, 1975, Idaho Power Company submitted to the Idaho State Office, BLM, a letter of intent to file a right-of-way and a map of the proposed right-of-way from Idaho-Nevada state line to the Hunt substation near Twin Falls, Idaho.

On February 4, 1977, Sierra Pacific Power Company amended the right-of-way application in Nevada in the vicinity of Cottonwood Creek near the Nevada-Idaho state line. This seven mile amended segment provides a linkage from the O'Neil Corridor to the Highway Corridor and is analyzed in Chapter 8 of this document.

Sierra Pacific Power Company filed an amendment to the right-of-way application in the vicinity of Valmy on February 4, 1977. This 26 mile amendment merely amended the original application to conform with the O'Neil Corridor as shown on p. 1-5 of this statement, which was informally adjusted by the company prior to preparation of the draft environmental statement.

Idaho Power Company filed a formal right-of-way application on February 15, 1977, for that portion of the transmission line in Idaho, from the Nevada-Idaho state line to Hunt, with the Idaho State Office, BLM. The application corresponds with the Highway Corridor from the state line to the intersection with the O'Neil



Corridor and then coincides with the O'Neil Corridor to the Hunt substation.

## FEDERAL AGENCIES JURISDICTIONAL RESPONSIBILITIES

### BUREAU OF LAND MANAGEMENT (BLM)

BLM has the lead responsibility to prepare the ES and to complete any realty action (right-of-way) affecting Federal lands.

The Federal Land Policy and Management Act of 1976 directs the BLM to inventory and identify areas of critical environmental concern (Section 201 (a) of the act) and to identify roadless areas of public land in excess of 5,000 acres. The agency is further required (Section 603(a)) to review those roadless areas having wilderness characteristics as described in the Wilderness Act of September 3, 1964.

This inventory and review would be accomplished prior to granting a right-of-way along the applied for route or any alternative.

At present, no regulations or criteria have been developed to implement the above two sections of the act.

### BUREAU OF RECLAMATION

The Bureau of Reclamation serves as the agency responsible for reviewing the power marketing aspects of the proposed right-of-way and has jurisdiction over certain withdrawn lands.

### ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA)

ERDA has the responsibility for considering the right-of-way location and use stipulations for any portions that may cross the Leach Hot Springs Withdrawal (N-7957).

### ARMY CORPS OF ENGINEERS (CORPS)

The Corps of Engineers is charged with administration of Section 404 of the Federal Water Pollution Control Act (FWPCA). Section 404 of that act (33 USC 1344) requires a permit be obtained from the Corps prior to the discharge of any dredged or fill material into navigable waters. Transmission line construction activities at crossing locations on the Humboldt and Snake Rivers may require a permit from the Corps.

### NATIONAL ADVISORY COUNCIL ON HISTORIC PRESERVATION

The Council is authorized to review and comment upon activities

licensed by the Federal Government which will have an effect upon properties listed in the National Register of Historic Places. To be adequate, the statement should show compliance with Section 106 of the National Historic Preservation Act of 1966, compliance with Executive Order 11593, and contact with the appropriate State Historic Preservation Officer.

#### BUREAU OF OUTDOOR RECREATION

The Bureau of Outdoor Recreation must be consulted regarding possible impacts to present or proposed projects under the Land and Water Conservation Fund Act and potential impacts to rivers designated or proposed for designation under the Wild and Scenic Rivers Act.

#### U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

Consultation with EPA is required to determine compliance of the project impacts with Section 309 of the Clean Air Act.

#### FEDERAL AVIATION ADMINISTRATION (FAA)

FAA criteria, as listed in AC 70/7460-2F, sets the maximum height above ground or water level for transmission line conductors and tower height-distance relationships in the vicinity of airports. These criteria should not be exceeded by any of the proposed corridors.

#### U.S. FISH AND WILDLIFE SERVICE (F&WS)

The U.S. Fish and Wildlife Service has been contacted in relation to the proposed right-of-way corridors. Consultation with the Fish and Wildlife Service is necessary to meet the standards and requirements as directed in the Fish and Wildlife Coordination Act (which also requires consultation with the appropriate state fish and game agencies), the Endangered Species Act, and the Bald Eagle Protection Act.

#### NATIONAL PARK SERVICE

The National Park Service has the responsibility for maintaining "The National Register of Historic Places." This register was consulted, and presently contains no sites along the corridors being considered.

### STATE ACTIONS INVOLVED

#### NEVADA

The Utility Environmental Protection Act of 1971 requires sub-



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

OREANA-HUNT TRANSMISSION LINE

## STUDY AREA

1976

- O'NEIL BASIN CORRIDOR
- HIGHWAY CORRIDOR
- ADOBE RANGE CORRIDOR
- METROPOLIS CORRIDOR
- ★ ALTERNATIVE SEGMENTS (SEE CHAPTER 8.)





OREANA-HUNT TRANSMISSION LINE

STUDY AREA

1976

- O'NEIL BASIN CORRIDOR
- HIGHWAY CORRIDOR
- - - ADOBE RANGE CORRIDOR
- - - METROPOLIS CORRIDOR
- ★ ALTERNATIVE SEGMENTS (SEE





mission of facility plans for review by the Nevada State Environmental Commission and the various state agencies. The Nevada Public Service Commission coordinates the state review through the State Clearinghouse and issues or denies the utility construction permit. On July 11, 1975, the Nevada Public Service Commission issued an order which grants a permit to Sierra Pacific Power Company for the construction of a 230 kv transmission line from the Tracy Power Substation to the Nevada-Idaho state line near Jackpot, Nevada.

#### IDAHO

Among Idaho State agencies, the Idaho State Clearinghouse coordinates review of development plans. The Idaho Public Utilities Commission issues or denies the utility construction permit. No permit has been issued to date.

#### LIST OF STATE JURISDICTIONAL RESPONSIBILITIES OVER THE APPLICANT

Formal applications required and filed, or expected to be filed:

##### PUBLIC SERVICE/UTILITIES COMMISSION CONSTRUCTION PERMIT

Nevada:	Filed 4/4/75	Approved 7/11/75
Idaho:	Filed 2/9/77	Approved

##### HIGHWAY CROSSING OR ACCESS PERMITS

Nevada State Highway Department:	Filed _____
Idaho State Dept. of Transportation	Filed _____

##### SNAKE RIVER AND SALMON FALLS RIVER CANYON CROSSINGS

Idaho Department of Water Resources Stream Channel Alteration Permit:

Filed: \_\_\_\_\_  
Idaho Department of Transportation, Aeronautical Board:  
Filed: \_\_\_\_\_

#### LOCAL ACTION INVOLVED

County planning boards would review the proposed right-of-way and development for compliance with county planning and zoning classification. These planning boards are afforded another opportunity for review when the draft ES is provided for their review and comment. The power companies contacted the county boards during October-November 1974 to present their proposed construction, answer questions, and receive comments.



## APPLICANT'S PROPOSED ACTION

### PURPOSE

The purpose of the proposed powerline from Tracy to Hunt is: (1) to transmit additional power to satisfy the present and projected agricultural, mining, industrial, and urban demands within the Sierra Pacific Power Company service area, serving approximately 314,000 people; (2) to satisfy the obligations of Certificates of Convenience and Necessity granted by the State of Nevada; (3) to provide a connection system through Idaho Power for reliable power for the future; (4) to insure an emergency power supply path from interconnected neighbor utility companies (Utah Power and Light and Idaho Power), in the event of a large generator or transmission line failure within the Sierra Pacific Power grid system; and (5) to provide increased system reliability within the Sierra Pacific Power system through "looped" power feed (two possible supply routes) for the Lovelock District, while also providing this benefit for the Elko, Nevada, area should Idaho Power Company or Wells Rural Electric Co. (which presently supplies power within the Elko area) find it desirable to tap this transmission line to provide additional electrical power. (See Transmission Line Interties Map, p. 1-24.)

Power demands indicating the need for constructing a 345 kv transmission line, which will be initially energized at 230 kv, are outlined in the Social-Economic sections of Chapter 2, p. 1-54.

### DESCRIPTION AND LOCATION OF COMPONENTS

#### CORRIDOR DESCRIPTION

The applicant's proposed route is shown on the Study Area Map, p. 1-5, and is identified as the O'Neil Basin Corridor.

O'Neil Basin Corridor: The O'Neil Basin Corridor originates at the Oreana substation, 15 miles northeast of Lovelock, Nevada, and extends northeast to the site of the proposed North Valmy coal-fired generating plant. Continuing northeasterly, the corridor intersects State Highway 51 about 40 road miles north of Elko. The corridor continues northeast, intersecting the Nevada-Idaho state line about six miles west of Jackpot. The corridor then continues toward the northeast, intersecting U.S. Highway 93 about eight miles north of the state line. Continuing northeast to a point three miles east of Rock Creek, the corridor then extends due north to the Hunt substation, which is about 11 miles northeast of Twin Falls, Idaho.

Each corridor considered in this statement has been analyzed as a general route along which a 140 foot-wide right-of-way may be



surveyed and granted. The following corridors, Highway, Adobe Range, and Metropolis, have been analyzed as alternative routes and are shown on the Study Area Map, p. 1-5

Additional alternative segments to the four corridors are indicated on the Study Area Map, and are described in Chapter 8.

Highway Corridor: The Highway Corridor generally coincides with existing powerline and transportation rights-of-way. It originates at the Oreana substation and extends in a northeasterly direction, paralleling Interstate 80 to a point where it intersects the O'Neil Basin Corridor five miles west of Valmy. The Highway Corridor then coincides with the O'Neil Basin Corridor to the site of the proposed North Valmy coal-fired plant, then roughly parallels Interstate 80 to a point six miles southwest of Elko. The corridor then crosses the highway and the Humboldt River southwest of Elko and roughly parallels the highway to the Wells substation, one mile west of Wells, Nevada. The corridor continues in a northerly direction, paralleling U.S. Highway 93 to a point on the state line about two miles west of Jackpot, Nevada. The corridor continues to a point six miles west of Rogerson, Idaho, then turns northeast and intersects the O'Neil Basin Corridor at a point five miles east of Hollister. The Highway Corridor then coincides with the O'Neil Basin Corridor to the Hunt substation.

Adobe Range Corridor: The Adobe Range Corridor coincides with the O'Neil Basin Corridor from the Oreana substation to the site of the proposed North Valmy coal-fired plant. The Adobe Range Corridor then coincides with the Highway Corridor to the base of Stony Point five miles northeast of Battle Mountain. The Adobe Range Corridor then extends northeast crossing State Highway 51 about 13 road miles north of Elko, continuing northeast to a point five miles north-northwest of Wilkins, Nevada, where it intersects the Highway Corridor, and parallels that corridor to the Hunt substation.

Metropolis Corridor: The Metropolis Corridor coincides with the O'Neil Basin Corridor from the Oreana substation to the site of the proposed North Valmy coal-fired plant. The Metropolis Corridor then coincides with the Highway Corridor to a point six miles southwest of Elko, extending from that point along the east flank of the Adobe Range to a location three miles west of the North Fork of the Humboldt River, where it intersects the Adobe Range Corridor. The Metropolis Corridor then coincides with the Adobe Range Corridor to Hunt substation.



## TRANSMISSION LINE DESCRIPTION

Supporting Towers: Consisting primarily of aluminum guyed delta design towers spaced, on the average, 1,200 feet apart with individual spans from 600 to 2,500 feet. These would vary in height from 60 feet to 121 feet, depending on terrain. The National Electric Safety Code states that the conductor can be no less than 32 feet from the ground, 34 feet from a road bed, and 45 feet from railroad surfaces; therefore, exact height of the towers would be governed by the safety requirements for conductor clearance. A few self-supporting towers may be used in rugged terrain or in other appropriate areas such as agricultural lands and end tower location at a substation in Nevada. Within the Idaho portion of the line a self-supporting, tower structure may be used within agricultural areas. (Refer to Figure 1-1, p. 1-12 , for tower design details.)

"Tower foundations are expected to be steel-reinforced concrete slabs, either precast and placed in holes below the local frost line, or cast in place when the structure can rest directly on bedrock. The guy anchors required by the Guyed Delta Towers would consist of either imbedded dead-man (plate or cone-shaped) anchors buried in the ground or anchor rods placed in holes drilled into rock. Use of the anchor type would be influenced by the local subsurface geology." (SE&A Engineers and Planners, Tracy-Hunt Transmission Project, Environmental Analysis, p. III-4, April, 1975.)

Tower foundations for the self-supporting structures would be cast in place. Soil removed for tower and guy anchor emplacement would be tamped and filled when towers and anchors are in place.

Equipment Pads/Tension Stations: Equipment pads would be needed at each tower site for safe equipment operation. In most areas these would consist of an area cleared of brush on which a crane may raise the tower and/or a backhoe may prepare footing or anchor sites. Where terrain is steep, or the surface is rough, a level, smooth pad would be required, except where location is environmentally sensitive, in which case non-conventional means would be used to set towers. Equipment pads would generally be a maximum of 15 feet by 30 feet for a crane and backhoe. Tension stations would be located at a two to three mile interval to facilitate installation of the conductor by tensioner and puller vehicles. The area involved would be approximately 0.02 acres per site along the centerline. A crane would not be needed at those tower sites on which the tower is set in place by helicopter.

Access: Access along the line for material delivery and equipment movement is essential. The power company prefers using



existing roads where these are available. Where roads do not exist and road construction is mutually approved by the contractor and the Authorized Officer, such roads would be constructed as necessary. Access between towers would not require bladed trails except over steep, rough terrain or where heavy brush interferes with safe vehicle operation. Number of miles of new road cannot be determined accurately at this time; however, the estimated construction access (shown in acres of surface disturbance) is listed on Table 1-1, p.1-13. The estimates were determined through map inspection, taking into consideration the topography and existing road networks.

Natural vegetation in the proposed right-of-way, access roads, and trails would be cleared only to satisfy constructional and operational safety requirements. The applicant has stated that any indiscriminate removal of topsoil and natural vegetation would not be allowed. Disturbed areas would be restored to their natural condition, insofar as practicable, by water barring, scarifying, leveling, or other approved practices. Topsoil could be replaced and stabilized, as necessary, when large areas of dirt are removed.

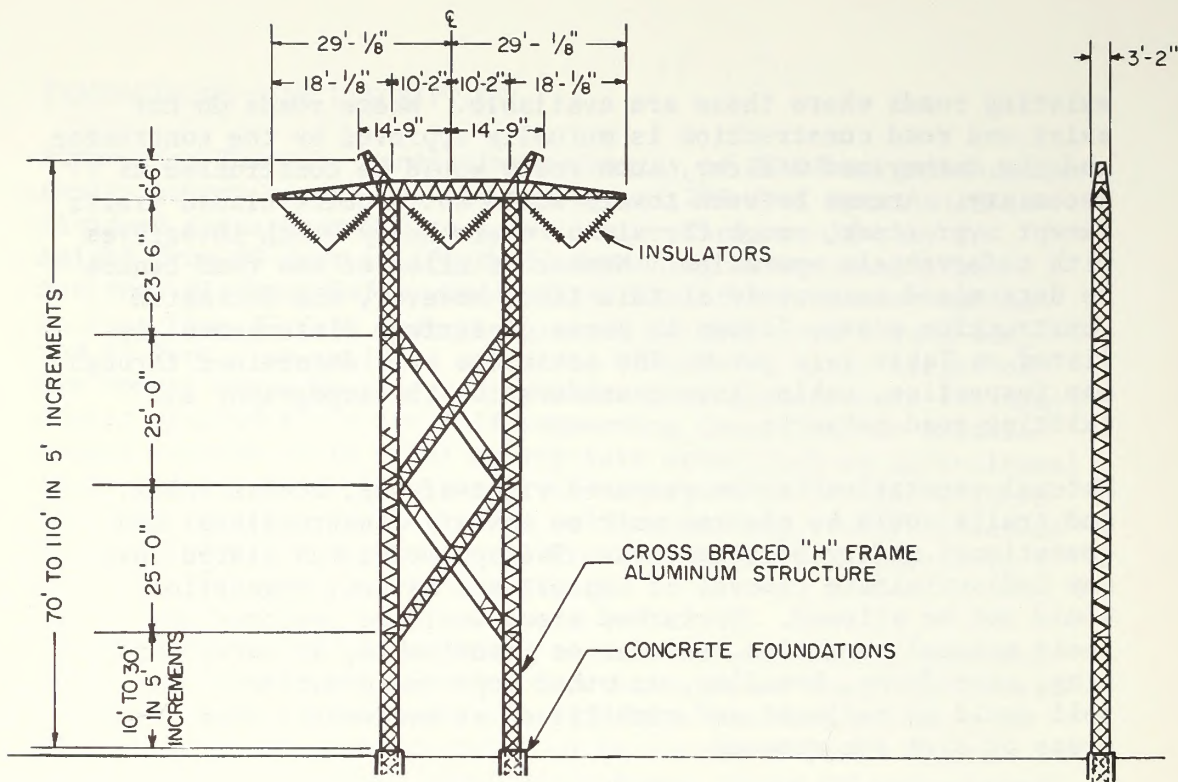
Transmission Line: The transmission line would consist of six aluminum conductors about one inch in diameter, and would be designed to operate as a single circuit, three-phase alternating current of 345 kv phase to phase, and a nominal voltage of 199 kv phase to ground.

#### SUBSTATIONS

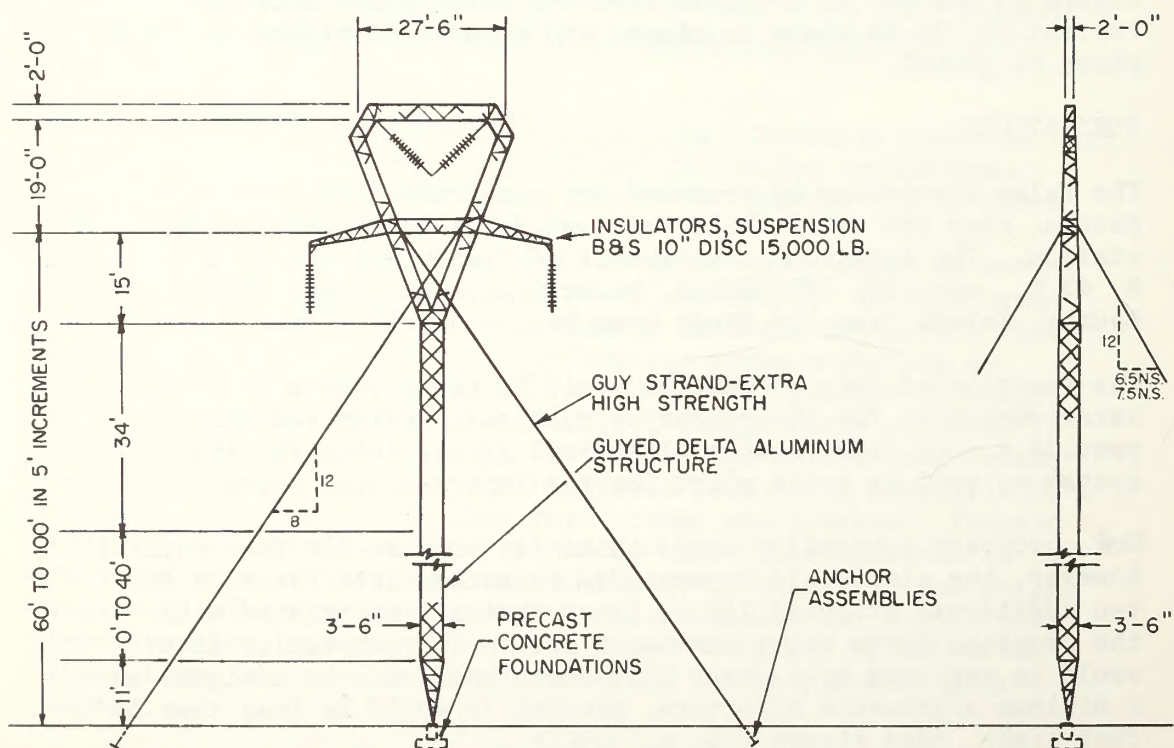
The Valmy substation is proposed for construction west of Valmy, Nevada, near the site of the proposed North Valmy generating station. The location is northeast of Treaty Hill in T. 35 N., R. 43 E., sec. 28, NW1/4SW1/4, Mount Diablo Meridian, Humboldt County, Nevada (see the Study Area Map, p.1-5 ).

The function of this substation would be to provide a point of interconnection for the company's northeast system and would provide a loop feed (double electrical supply path) for the system as well as a tie point for the imported Utah power.

The proposed substation would initially measure 500 feet square; however, the site would be expanded to accommodate the need for two additional proposed 230 kv lines that are associated with the proposed North Valmy generator site. The substation site would be enclosed by a chain link fence and would be designed as a minimum silhouette structure, meaning it would be less than 50 feet high. (See Figure 1-2, p. 1-14.)



CROSS BRACED "H" FRAME TOWER



GUYED DELTA TOWER

FIG. 1-1 TYPICAL TRANSMISSION LINE TOWERS



**TABLE 1-1**  
**SUMMARY OF LAND REQUIREMENTS AND**  
**SURFACE DISTURBANCE (IN ACRES)**

	Oreana- Valmy	O'Neil Basin Corridor Valmy- Stateline	Stateline- Hunt	Total	Oreana- Valmy	Highway Corridor Valmy- Stateline	Stateline Hunt	Total
1. Total Miles of Right-of-way (R/W) Corridor	73.5	153.5	59	286	103	197	60	360
2. Total Area within Right-of-way (140' wide)	1247.3	2604.8	1001.2	4853.3	1747.9	3343.0	1018.2	6109.1
3. Construction Access <sup>a/</sup>	186.06	507.27	83.64	776.97	124.85	272.73	72.73	470.31
4. Site Construction								
a. Tower Sites	5.37	11.21	4.31	20.89	7.52	14.83	4.38	26.28
b. Crane pad	0.83	2.74	0.10	3.67	--	0.29	--	0.29
c. Tension Station	0.67	1.41	0.54	2.62	0.95	1.81	0.55	3.31
d. Storage Yards*	8.4 (9.77)	17.54 (22.09)	6.74 (6.91)	32.68 (38.77)	11.77 (0)	22.5 (22.99)	6.86 (0)	41.13 (22.99)
e. Substations								
Valmy	5.74	--	--	5.74	5.74	--	--	5.74
Hunt	--	--	0.56	0.56	--	--	0.56	0.56
5. Total Surface Disturbance w/o helicopter	207.07	540.17	95.89	843.13	150.83	311.72	85.08	547.63
w/helicopter	109.97	219.36	83.3	412.63	--	276.16	--	276.16

	Oreana- Valmy	Adobe Range Corridor Valmy- Stateline	Stateline- Hunt	Total	Oreana- Valmy	Metropolis Corridor Valmy- Stateline	Stateline Hunt	Total
1. Total Miles of Right-of-way (R/W) Corridor	73.5	181.5	60	315	73.5	188.5	60	322
2. Total Area within Right-of-way (140' wide)	1247.3	3080.0	1018.2	5345.5	1247.3	3198.8	1018.2	5464.3
3. Construction Access <sup>a/</sup>	186.06	386.67	72.73	645.46	186.06	311.51	72.73	570.30
4. Site Construction								
a. Tower Sites	5.37	13.25	4.38	23.0	5.37	13.76	4.38	23.51
b. Crane pad	0.83	1.42	--	2.25	0.83	0.71	--	1.54
c. Tension Station	0.67	1.67	0.55	2.89	0.67	1.73	0.55	2.95
d. Storage Yards*	8.4 (9.77)	20.7 (23.1)	6.86 (0)	35.96 (32.87)	8.4 (9.77)	21.54 (22.72)	6.86 (0)	36.8 (32.49)
e. Substations								
Valmy	5.74	--	--	5.74	5.74	--	--	5.74
Hunt	--	--	0.56	0.56	--	--	0.56	0.56
5. Total Surface Disturbance w/o helicopter	207.07	423.7	85.08	715.85	207.07	349.25	85.08	637.86
w/helicopter	109.97	256.35	--	366.32	109.97	264.96	--	374.93

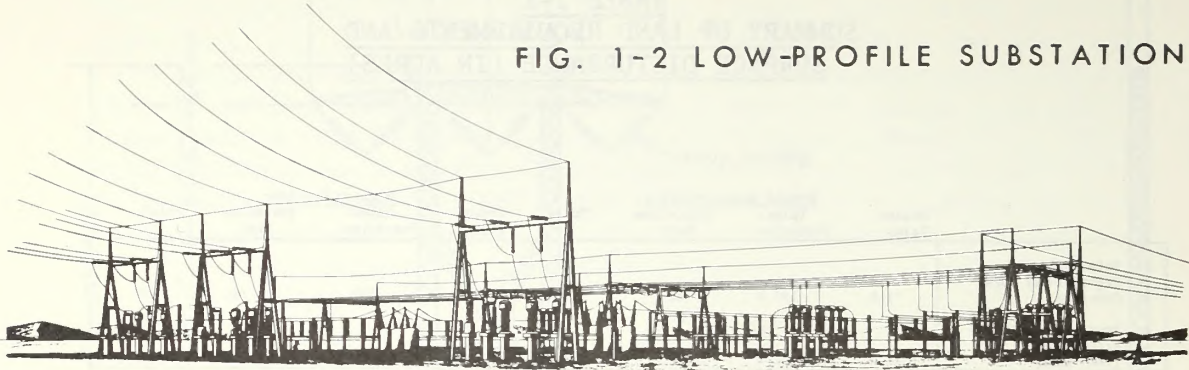
Given or Known  
140' R/W - 16.96 ac/mi.  
Centerline access trail = 10' wide = 1.21 ac/mi.  
Towers 4.6/mile average.  
Storage Yards - 35 mi. interval 4 ac/ea. average  
Tension Station - 2 mile interval 20' X 40' = 0.02 ac/ea.  
Tower Sites - 0.015 acres each

Crane Pad - .01 acres each-rough terrain only

Substations  
Valmy - 500' X 500' (5.74 ac)  
Hunt Addition - 110' X 220' (0.56 ac)  
\*Storage yard requirements if using helicopter  
(in parenthesis)

<sup>a/</sup> Construction access includes the 10-foot wide centerline access trail, the majority of which would be overland travel not requiring blading.

FIG. 1-2 LOW-PROFILE SUBSTATION



Courtesy of Bureau of Reclamation

The substation would contain equipment necessary for automated control, electrical compensation, and the transmission of electrical power. The substation would contain two 230 kv and two 120 kv terminals with necessary circuit breakers, shunt reactors, series capacitors, transformers and related control, metering, and communication facilities. The substation would be linked with control equipment at other substations via facilities that utilize the powerline as a land communication line. It would also be constructed to allow expansion for use as a 230 kv switching station for future company powerlines.

The existing Hunt, Idaho, substation (see the Study Area Map, p. 1-5 ) would serve as the eastern terminal, since this site has a direct 230 kv tie to the Idaho Power interconnected transmission system. The location near Eden, Idaho, is T. 9 S., R. 19 E., sec. 21, NW1/4NE1/4, Boise Meridian, Jerome County, Idaho.

In order to accommodate the proposed transmission line connection, the site would require modifications that include: (1) a land area of 110 feet by 220 feet, extended from the northwest corner of the site; (2) topping the existing low profile 230 kv equipment; (3) installing two air brake switches and one power circuit breaker; and (4) installing a transmission line and tower to match existing end towers.

To utilize the 345 kv transmission line capacity in the future, the Valmy and Tracy substations would require modification to accommodate the 345 kv facilities and interconnect the higher voltage with the company's existing system. Modifications would also be required at Idaho Power Company's Hunt substation and/or interconnection with Idaho Power Company's 345 kv system.

The Oreana substation, an existing 120 kv facility, would be the terminal point for the Tracy to Oreana transmission line (see



photograph below). The function of this substation would be to provide a point of interconnection for distribution of additional electrical power. When intertie No. 2 is completed and energized, the Oreana substation would be by-passed.



*Existing 120 kv substation, Oreana, Nevada.*

#### STORAGE AND STAGING AREAS

Material storage yards would be required approximately 50 to 70 miles apart in the route vicinity. These would be located near paved or high quality dirt roads for transportation requirements and at company facilities or near occupied residences for theft prevention. About 4 acres would be required at each yard to allow space for material off-loading, classifying, sorting, storage, loading, and equipment storage. Numerous trips would be necessary to and from these areas, and there would be significant equipment activity (primarily forklifts and trucks) on each site.

Construction sites would be maintained in a sanitary condition at all times, and all garbage, refuse, and liquid waste at these sites would be regularly disposed of in an appropriate manner.

Areas for storage of flammable liquids would be properly designed to retain liquids if accidental spills should occur.

#### LAND REQUIREMENTS

Table 1-1, p. 1-13 reflects the summary of general land requirements and surface disturbance associated with the proposed powerline construction for a given corridor segment. This table reflects total surface disturbance for ground construction and also reduced disturbance reflecting use of helicopters in the transmission line construction process. Sierra Pacific Power



Company has submitted surface disturbance data utilizing the assumption of helicopter placement of towers along each corridor where construction access is necessary; i.e., those areas where overland vehicular travel is not feasible. This data is shown in comment letters 32 and 54, Appendix L. Although some basic assumptions and total acres of disturbance do differ between Table 1-1 and the company's data, a close similarity of data (within 2 percent) exists for surface disturbance under helicopter construction methods for the Adobe Range and Metropolis Corridors. The actual area permanently required for the many facilities of the project would be somewhat less than reflected in the table. For example, where possible, the roads would be rehabilitated following construction; and temporary storage yards would be rehabilitated by water barring, leveling, scarifying, or other approved practices when no longer required. The free-standing structures proposed for cropland or steep terrain areas would require only 100 square feet (0.002 Ac.) and 0.03 percent of the right-of-way area.

New materials sites for sand and gravel would not be required for the transmission line construction. All concrete materials or gravel would be obtained from established commercial operations.

No material sites for sand and gravel required for access roads have been anticipated. Selection of the line route considers access roads established by the county or state. In most cases, these existing roads are not graveled.

#### COMMUNICATIONS SYSTEMS

The company proposes using "powerline carrier communication" (a radio signal induced onto a phase line and transmitted along the line to a receiving station in a manner similar to telephone conversation) for line control, telemetering, and voice communication. The transmitter-receiver facilities would not require special areas but would utilize part of the proposed substation area or existing company facilities.

#### CONSTRUCTION SCHEDULE AND IMPLEMENTATION STAGES

In order that a transmission path would be available to meet contract purchase agreements, the company proposes to start construction of all substations and the transmission line as soon as a right-of-way grant is made. The present power purchase contract with Utah Power and Light Company is for taking delivery of an additional 100 Mw by October 1977. (Presently, 50 Mw flows over the Fort Churchill to Sigurd, Utah, intertie). The Utah Power Company will be prepared to deliver 100 Mw at Hunt, Idaho, during 1977. The remaining 50 Mw of the contracted total of 200 Mw will be available during 1978.



This work was finalized in the Tracy-Hunt Environmental Analysis publication by SE&A Engineers/Planners which was submitted by the Company as a part of the right-of-way application to BLM. Project description, baseline data, and subsequent changes or additions have been used extensively in the preparation of this statement and are referenced in this statement.

Following contract negotiations to secure a source of power and completion of the company's environmental constraint study to select a practical corridor, preliminary field surveys were conducted to lay out the centerline, locate primary engineering control points and section corners, and conduct an archeological survey along the proposed alignment. Field operations were conducted utilizing two pickup trucks and a helicopter. Should an alternative corridor prove more desirable for environmental protection reasons, the company would study the alternative corridor for a preferred alignment, conduct field searches for primary engineering control points (section corners, USGS geodetic bench marks, etc.), and survey to tie the preliminary transmission line turn points to the established land surveys. Equipment, methods, and materials would be similar to those described above.

#### RIGHT-OF-WAY ACQUISITION

Land required for the proposed transmission line right-of-way on private lands would be acquired in the form of an easement subject to use stipulations. The respective land owner would be paid just compensation based upon either an appraisal (for public lands) or by a negotiated settlement (for private lands) satisfactory to both parties. Condemnation of private property may be necessary when satisfactory settlement cannot be secured.

Land required for substation sites would be purchased from the land owner for the company's exclusive development and use. (Table 3-9, p. 3-35, reflects percent of private land ownership by corridor segment.)

#### CONSTRUCTION SEQUENCE AND TECHNIQUES

Substation Construction: An area 500 feet by 500 feet (5.74 acres) would be required for the Valmy substation (Study Area Map, p. 1-5), and an area 110 feet by 220 feet (0.56 acres) would be required for the Hunt substation addition. The sites would be cleared of all vegetation using a grading blade, motor-grader or large bulldozer, and covered with a 6-inch layer of crushed gravel. For safety and security reasons, the boundary would be fenced with an eight-foot chain link fence. A considerable amount of construction activity would occur on the site to prepare concrete foundations and to install the various pieces of



electrical equipment described previously.

**Access Improvement or Construction:** One criterion in the company's selection of the proposed route was the availability of adequate access adjacent to, or in close proximity of the route. New construction access roads would be required for sections of the line that do not parallel existing roads or where direct access is difficult because of terrain features. These roads would be sized and routed to minimize damage to the existing terrain and vegetation. The roads would follow, or be located to follow, land contours and would avoid creating erosion or visual problems to the maximum extent possible. Many of these roads may be required not only for construction but also for line operation and maintenance access. Equipment required for this phase of construction would include large bulldozers, motor-graders, service trucks, and crew transportation vehicles (pickup trucks).

**Storage and Staging Areas:** Storage areas would be cleared of brush and smoothed for a level work area where materials can be classified, sorted and stored for distribution to assembly sites or tower sites. Equipment use of these areas would include: motor-grader, heavy trucks, forklifts, and small trucks (or light trucks).

All construction materials and related litter and miscellaneous debris, including uprooted natural vegetation, would be removed from the construction sites and disposed of in an approved manner. The applicant has stated that burning of brush, debris, or other materials would not be permitted.

**Tower Site Preparation and Installation:** During the tower installation phase, a small pickup, an air compressor, and a back-hoe machine or auger truck, either wheeled or track-driven, would usually be the equipment driven to the tower site to install the tower footing and guy anchors. Where terrain requirements indicate, tower footings would be cast in place; three- to five-yard capacity concrete trucks would service the tower site.

Where terrain is steep, access spurs and equipment pads would be necessary to afford safe operation of equipment during tower site preparation and subsequent construction.

Components would be delivered to the tower site for construction by a skilled crew. This would involve two pickup trucks and a medium-sized boom-equipped truck, or tracked type vehicle and large 44,000 lb. gross weight transport trucks and trailers. This crew will set the tower in its permanent location. In the case of the self-supporting tower, the crew would require a concrete truck for poured-in-place footings and would also back-fill and pack the soil around each tower.



The applicant's estimated construction time frame for each corridor segment is based upon an optimum construction rate of 28 miles per month, as shown on Table 1-2, below. A more realistic estimate based on actual previous construction times is shown on Table 3-7, p. 3-31.

TABLE 1-2  
CONSTRUCTION TIME REQUIREMENTS

<u>Corridor</u>	<u>Distance</u>	<u>Construction Time</u>
<u>O'Neil Basin Corridor</u>		
Oreana to Valmy	73.5 miles	3 months
Valmy to Stateline	153.5 miles	5 months
Stateline to Hunt	59.0 miles	2 months
Total	<u>286.0 miles</u>	<u>10 months</u>
<u>Highway Corridor</u>		
Oreana to Valmy	103.0 miles	4 months
Valmy to Stateline	197.0 miles	7 months
Stateline to Hunt	60.0 miles	2 months
Total	<u>360.0 miles</u>	<u>13 months</u>
<u>Adobe Range Corridor</u>		
Oreana to Valmy	73.5 miles	3 months
Valmy to Stateline	181.5 miles	6 months
Stateline to Hunt	60.0 miles	2 months
Total	<u>315.0 miles</u>	<u>11 months</u>
<u>Metropolis Corridor</u>		
Oreana to Valmy	73.5 miles	3 months
Valmy to Stateline	188.5 miles	7 months
Stateline to Hunt	60.0 miles	2 months
Total	<u>322.0 miles</u>	<u>12 months</u>

Construction of the substation will occur concurrently with the construction of the power transmission lines. Actual construction time may vary due to season of the year, wildlife migration and seasonally critical habitat, use of more than one construction crew, etc.

#### PRE-PLANNING AND PRELIMINARY RIGHT-OF-WAY STUDIES

In April, 1973, Sierra Pacific Power Company engaged the services of SE&A Consulting Engineers/Planners to conduct an inventory and route-selection study to determine a final transmission line routing for which the company could apply for a right-of-way.

Extensive baseline data was prepared along with consultation with numerous local, state and federal agencies in Nevada and Idaho. Meetings were held with local officials as well as four public meetings in Nevada and Idaho.

The operations would require a small crew using a mobile crane and two or three pickup trucks. For the guyed tower, the crew would also use a compressor, tampers, and a small end-loading tractor.

"Towers can be erected by using a helicopter. The normal procedure when utilizing helicopters is to establish staging areas along the line route at about 10-mile intervals. The framing material for 10 miles of line is then delivered to the staging area and towers are assembled by the framing crews. Each tower is then transported to its individual site by the helicopter where a ground crew of 10 to 15 men install it at its permanent location. The ground crew will use from three to five pickup trucks for transportation.

This method eliminates the necessity of delivering the tower components and some construction equipments to each site and assembling a tower at each site. Therefore, it reduces the amount of on-site construction activity. However, this method does not eliminate the necessity for providing access to each tower site for other construction operations and does not require staging areas at 10-mile intervals along the route. The method also creates an element of risk (safety of working crew) not associated with normal ground construction procedures." (SE&A Environmental Analysis, p. III-10, April, 1975.)

Sierra Pacific Power Company has specified that helicopters will be utilized to place towers where terrain is difficult (those areas where overland vehicular travel is not feasible). Helicopter construction methods in the areas where overland vehicular travel is feasible are at the option of the contractor.

**Conductor Installation:** Conductors are installed with a tensioner and a puller. The tensioner consists of a large trailer loaded with two to six reels of conductor and a braking device. The puller is a large machine, powered by gas or diesel fuel, with three permanent reels containing about two to three miles of steel wire rope on each reel. The puller is located about two or three miles ahead of the tensioner and in line with the towers.

"To install the conductor, the ends of the wire rope from the puller are pulled towards the tensioner 2 miles away and threaded through sheaves (pulley-like mechanisms) installed on each tower. A vehicle traveling the right-of-way centerline is needed to



provide the power because the three steeled-wire ropes are too heavy to be pulled out for 2 miles by manpower alone, although in some locations manpower may be used over short distances. Each of the three reels of conductor is attached to a reel of steel wire rope and as the pulling machine begins to reel in the wire, it also installs the conductor. This operation is repeated along the route at intervals of about 2 miles for the entire length of the line. The conductor-stringing operation usually requires a crew of 10 to 15 men and three to five pickups, a medium-sized materials truck, a large truck or trailer for the tensioner, and another large truck. When the aluminum conductors have been installed and pulled to the proper sag and tension, a clipping crew permanently attaches the conductors to the insulators by removing the stringing sheaves and installing clamping hardware. This crew will use two pickup trucks in the course of their duty." (SE&A Environmental Analysis, p. III-11, April, 1975.)

**Line Energizing:** Upon completing inspection of the constructed line and electrical facilities, the power system would be energized by attaching leads at the power substations and closing power circuit breakers. This phase requires close coordination between the intertied utilities to prevent electrical equipment damage or failure.

**Cleanup and Restoration:** "Cleanup and site restoration will be started when the construction crews have completed a section of the line. Debris will be disposed of in an approved manner and the restoration crew will install water bars along any permanent roads that have been constructed." (SE&A Environmental Analysis, p. V-16, April, 1975.) All roads, trails, and disturbed areas no longer needed for line operation and maintenance would be obliterated, and rehabilitated to restore the natural ground contour, wherever feasible. Fertilizers, insecticides, etc. are not planned for use in rehabilitation. Where soil and climate are favorable, disturbed areas would be seeded to re-establish a vegetative cover in as short a period of time as possible.

#### SOURCE OF CONSTRUCTION MATERIALS

The utility companies have contracted with Kaiser Aluminum Company for the tower structures and Alcoa Aluminum Company for the conductor. Other construction items - shield cable, insulators, anchors, guy cables, etc. - would be purchased from various electrical supply companies. The concrete for tower bases would be purchased from ready-mix concrete firms in the vicinity of the line route.



## WORK FORCE

The construction force would vary from approximately 30 people during the early stages to as many as 150 people during full construction activity. (See Table 3-7, p. 3-31.)

The crews employed in constructing the transmission intertie would reside at available commercial facilities in towns along the route. The type, number, and size of crews are listed below.

<u>Type of Crew</u>	<u>Number of Crews</u>	<u>Size of Crews</u>
Access crews	1	2
Foundation preparation and installation	1-3	4
Anchor crew	1-3	4
Material delivery	1	5
Tower Assembly	1-3	8
Erection crew	1-2	6
Stringing crew	1	15
Clean-up crew	1-2	5

## INTERRELATIONSHIPS WITH OTHER PROJECTS

### SIERRA PACIFIC POWER COMPANY

Northwestern Nevada's electrical energy demands are presently being supplied by Sierra Pacific's power generation of 566 Mw, contract supply interties with Pacific Gas and Electric Company for 108 Mw, and the intertie No. 1 with Utah Power and Light for 50 Mw.

The Tracy to Oreana 345 kv transmission line, to provide an interim power route to the Lovelock, Nevada, vicinity, was separated from the entire Tracy to Hunt intertie No. 2 and addressed under a separate environmental analysis. (BLM, Tracy-Oreana Environmental Analysis Record, December, 1975.) The completion of the Tracy to Hunt intertie No. 2 with Utah Power and Light through Idaho Power Company would bring 150 Mw of additional power to the Sierra Pacific Power system, and would also create a path for possible transactions with the Idaho Power Company.

The proposed transmission system, Tracy to Hunt intertie, is planned for interconnection with the Company's proposed Valmy coal-fired generation station. The projects involve separate facilities in point of time and source of power, however, as a total they are related as in any component of a system. Additional 230/345 kv transmission lines are proposed to originate from the Valmy coal-fired generation station parallel to the subject



line to Reno, and from Valmy south to Austin to interconnect with intertie No. 1 from Utah.

The proposed transmission intertie and future Valmy coal-fired generation units No. 1 and 2 would meet the company's projected electrical supply capacity needs for about the next 10 years. Beyond that time frame, no firm plans have been made; however, should present growth trends continue, additional electrical supply capacity would be required in the service area.

#### OTHER POWER INTERRELATIONSHIPS

The three peripheral companies, Utah Power and Light, Idaho Power, and Pacific Gas and Electric, are intertied with Western companies forming the Western Systems Coordinating Council (this regional utility council, consisting of electrical utilities, functions to establish guidelines for system design adequacy to insure dependability of the region's electrical supply system, and also coordinates power supply and use).

Sierra Pacific Power Company has agreed to allow Idaho Power Company to tap the intertie No. 2 line to supply its Nevada customers (in Elko County). Also, Sierra Pacific Power Company has agreed, in a public hearing, to negotiate in good faith with Wells Rural Electric Corporation concerning a tap on intertie No. 2, should they so desire.

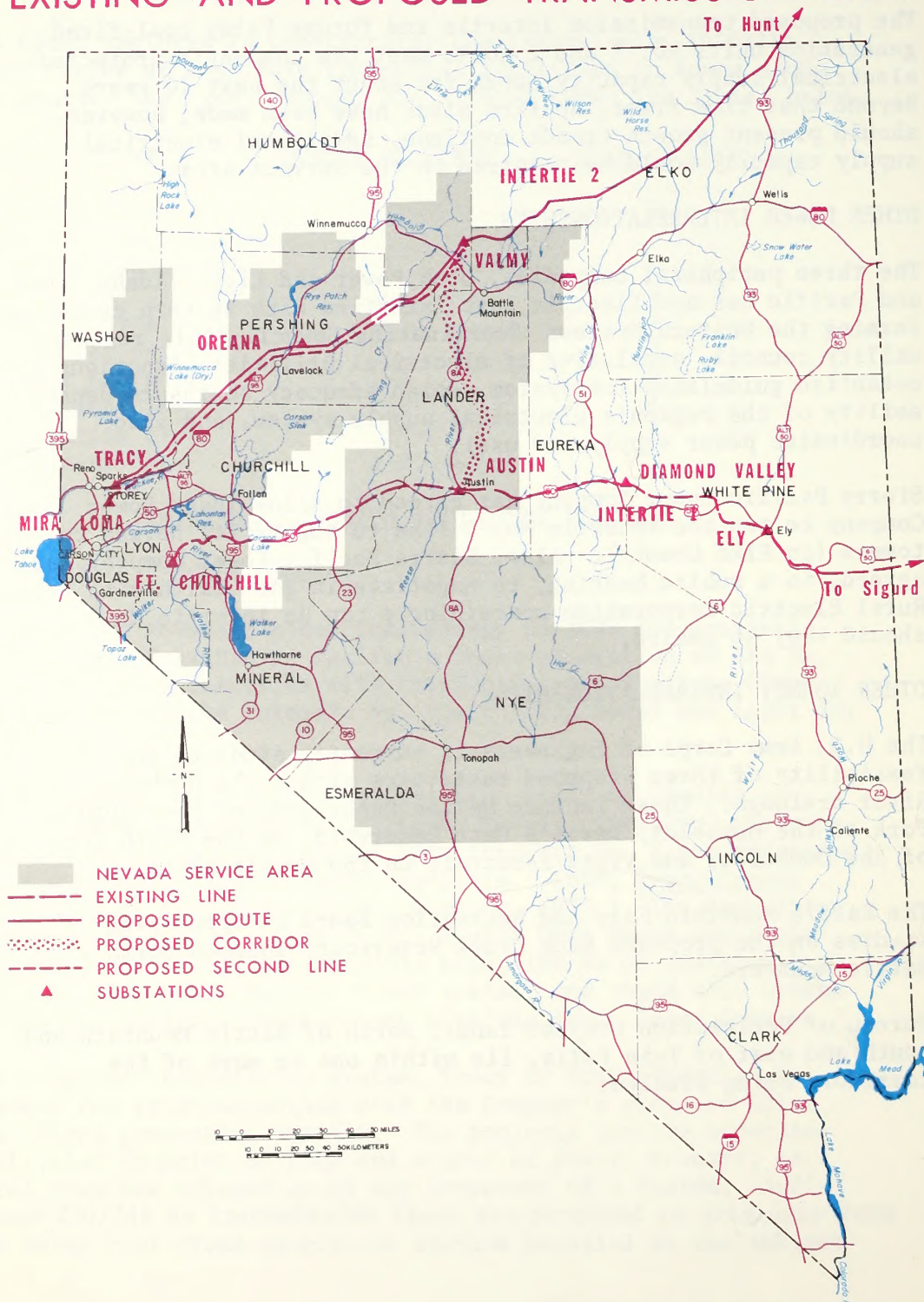
#### OTHER AGENCY INTERRELATIONSHIPS

The U.S. Army Corps of Engineers is currently studying the feasibility of three proposed reservoirs within the Humboldt River drainage. These include Hylton Reservoir, on the South Fork of the Humboldt; Devil's Gate Reservoir, on the North Fork of the Humboldt; and Vista reservoir on the Mary's River.

The Battle Mountain Fair and Recreation Board is sponsoring studies on the proposed Rock Creek Reservoir, located north of Battle Mountain.

Bureau of Reclamation project lands, north of Battle Mountain and south and east of Twin Falls, lie within one or more of the corridors being studied.

# SIERRA PACIFIC POWER COMPANY EXISTING AND PROPOSED TRANSMISSION LINES





## 2

## DESCRIPTION OF THE ENVIRONMENT

## INTRODUCTION

The purpose of this report is to provide a description of the environment of the project. The report is divided into two main parts: a description of the physical environment and a description of the social environment. The physical environment is described in terms of the location of the project, the climate, the topography, and the vegetation. The social environment is described in terms of the population, the economy, and the culture.

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# ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED TRANSMISSION LINES





## 2

# DESCRIPTION OF THE ENVIRONMENT

## INTRODUCTION

The following is a description of the environment as it presently exists; description is based on an analysis of the environment on an area basis, rather than on a line description basis. The area described varies in width from about 3 miles to over 50 miles and extends from the vicinity of Oreana, Nevada, in the Humboldt River Drainage to Hunt, Idaho, in the Snake River Drainage.

The description of the social and economic aspects of the existing environment required the inclusion of Sierra Pacific Power Company's service area as shown on the Transmission Line Interties Map, p. 1-24 , and the Service Area Map, p. 2-58 .

## CLIMATE

The region between Lovelock, Nevada, and Twin Falls, Idaho, lying within the Great Basin physiographic province has a middle latitude desert and steppe climate. The controlling factors on the weather include: latitude, elevation of the landscape, topographical features, global wind patterns, and seasons of the year.

Three prevailing air masses affect the region. In the summer, high-pressure cells move southward and the Great Basin is covered with warm, dry air. During winter, a Canadian high-pressure cell becomes the source of continental polar air masses. The third air mass, (which operates year-round) originates over the Pacific Ocean and moves over the Sierra Nevada Mountains where the air mass loses its moisture as it ascends the western slope. As it descends the eastern slope, the air is warmed. The warm, dry air then moves easterly across Nevada and southern Idaho.

Precipitation is highly variable (see Table 2-1, p.       ), occurring mostly as snowfall in winter, as light rain in spring, and as thunderstorms in the summer. There are 10 to 30 thunderstorm days each year. The thunderstorms are sporadic and frequently torrential in nature.

Relatively high evaporation (40 to 50 inches per year) occurs during the summer when temperatures are highest. The heat from the desert floors and the high winds contribute to the evaporation rate.

TABLE 2-1  
PRECIPITATION AND TEMPERATURE TABLE

Data extracted from published records of the National Weather Service, snow surveys of the U.S. Department of Agriculture, and measurements made by the Nevada Department of Conservation and Natural Resources.

STATION NAME	LAT.	LONG.	ELEV.	TYPE OF DATA	YEARS OF RECORD	SUMMARY OF DATA		
						AVE. ANNUAL	MAX. ANNUAL	MIN. ANNUAL
Arthur 5 NW	40°47'	115°11'	6,280	precip.	56	14.87	23.63	6.42
Battle Mtn.	40°38'	116°56'	4,515	precip.	92	6.70	14.03	2.40
				temp.	44	48.8	53.0	45.3
Beowawe	40°36'	116°29'	4,695	precip.	86	6.65	14.92	2.17
				temp.	44	48.0	52.4	45.3
Deeth	41°04'	115°17'	5,343	precip.	12	10.20	19.00	5.97
				temp.	13	43.4	45.3	41.2
Elko	40°50'	115°47'	5,075	precip.	94	8.74	18.94	0.94
				temp.	44	45.6	49.1	43.0
Jacks Creek Pass	41°33'	116°00'	7,725	precip.	15	32.00	41.46	22.48
Lamoille	40°41'	115°28'	6,290	precip.	58	17.14	29.16	8.60
				temp.	44	44.9	50.4	42.7
Lovelock	40°11'	118°28'	3,977	precip.	70	4.88	11.93	0.85
				temp.	44	51.6	54.6	48.1
Mala Vista Ranch	41°19'	115°15'	5,585	precip.	22	9.64	15.83	6.57
				temp.	25	43.2	45.4	41.0
Midas 4 SE	41°12'	116°44'	5,200	precip.	11	9.26	15.02	6.17
Rye Patch Dam	40°28'	118°18'	4,135	precip.	28	7.15	12.48	3.26
				temp.	28	50.6	53.4	47.7
Wells	41°07'	114°58'	5,633	precip.	58	9.76	18.51	3.40
				temp.	25	44.7	46.5	41.8
Twin Falls	42°35'	114°28'	3,770	precip.	30	9.11	13.67	3.79
				temp.	30	49.7	51.6	47.4

Precipitation is given in inches. Temperature is given in degrees Fahrenheit. Nevada data is taken from "Hydrologic Reconnaissance of the Humboldt River Basin, Nevada", pp. 78-79. Twin Falls data is taken from National Weather Service records at Boise, Idaho.

Clear skies and low humidity permit a wide diurnal temperature fluctuation. Heat absorbed by the ground during the day is quickly radiated into the clear skies at night. Temperatures can vary from 30 to as much as 70 degrees Fahrenheit during a 24-hour period. Maximum temperatures on a summer afternoon may reach or exceed 100 degrees Fahrenheit (F.) with summer night minima near 40 degrees F. in the higher elevations. Most of ground surface is



frozen during an average winter--the depth of frozen ground depending on the elevation of the area and the severity of the winter.

The average growing season (number of days between the last killing frost in the spring and the first killing frost in the fall) ranges between 80 and 140 days in the Nevada portion of the study area. Some higher elevations have less than 80 frost-free days per year.

At the lower elevations in the Twin Falls region (below 4,300 feet in elevation), frost-free days range from 110-180 days; at elevations greater than 5,000 feet, the growing season is less than 80 days. The growing season is generally between May 10 and September 30.

Temperature inversions occur frequently throughout the study area. Air which is cooled at night through contact with the cold, radiating surfaces of the valley floors increases in depth and forms a surface inversion (dense, cold air flowing down slopes and gathering in the valleys). The maximum depth of the inversion is reached in the middle of the night. After sunrise, upper layers warm before the surface, thereby trapping colder air near the surface and preventing upward mixing of near-surface atmospheric pollutants. Calm, windless conditions allow this situation to persist, thereby causing air pollution build-up until dissipation by wind occurs. Since the study area is generally very windy, air pollution through inversion build-up is not a serious problem. Winds at the ground surface are strongest during the mid-afternoon. Nights are not as windy, which is one of the factors resulting in the rapid night-time cooling of the surface air. The area receives high, gusty winds during localized storms.

## AIR QUALITY

The study area is sparsely populated and generally undeveloped. The scattered population centers are not large enough to generate significant quantities of air pollutants. Periodic sampling for nitrogen oxides and sulfur dioxide carried out by the Nevada State Air Quality Office has indicated the levels are too low to warrant establishing monitoring stations. In addition, there are no measurable levels of photochemical oxidants in the study area. In fact, the largest source of pollutants over most of the area is naturally generated particulate matter from dust storms. Although these storms are intermittent, the particulate matter generated by them often exceeds state and national air quality standards (see Appendix B, p. 10-5 ). The State Air Quality Office operates monitoring stations for total suspended particulate (TSP) in the study area at Lovelock, Winnemucca, and Battle Mountain. Air quality data from 1972-1975 collected by the Washoe County District Health Department in Reno is also presented in Appendix B.



The Environmental Protection Agency issued regulations in late 1974 for the establishment of air quality classes for total suspended particulates (TSP) and sulfur dioxide (SO<sub>2</sub>). Initially, all areas were placed in Class II (areas in which deterioration normally accompanying moderate, well-controlled growth would be considered insignificant) with the provision that states could reclassify any area as appropriate. To date, none of the areas within the State of Nevada have been officially redesignated. No air quality maintenance areas or air quality maintenance plans have been established in the study area.

In addition to natural sources of pollutants in the area, there are some man-made sources. Transmission lines cause electrons to be emitted from the surrounding air (corona discharge) and also cause the formation of certain pollutants such as ozone and nitrogen oxides (corona effluents). This level of emissions from powerlines is considered insignificant (Final ES, Tucson Gas and Electric Transmission Line Corridor, 1975). Other sources include industry, mining, and automobiles. Although there is limited data on these sources, none are considered to detract significantly from the generally good air quality of the region.

## WATER

Water bodies in the area include two major rivers, the Humboldt and the Snake, and numerous small rivers and creeks, including Marys River, North Fork of the Humboldt, Maggie Creek, and Salmon Falls Creek. Some smaller creeks are dry part of the year, while others flow year-long and support riparian vegetation.

Some of the reservoirs in the area include: Bishop Creek (north of Wells), Willow Creek (northeast of Battle Mountain), Rye Patch (north of Oreana), Wild Horse (on Nevada State Highway 51), Wilson Lake, Murtaugh Lake (both east of Twin Falls), and Salmon Creek Reservoir (west of Rogerson, Idaho). There are four proposed reservoir sites: Rock Creek (north of Battle Mountain), Hylton (on the South Fork of the Humboldt), Devil's Gate (on the North Fork of the Humboldt), and Vista (on Marys River). Refer to the Recreation Activities Map, p. 2-55, for locations of proposed reservoirs.

Stream flooding and sheet flooding (overland flow) commonly occur in the area due to short-term, high-intensity thunderstorms in the summer and snow melt in the spring. Flooding furnishes sufficient erosive power to move large amounts of soil and rock downslope. Flooding potential is increased by the scattered, thin vegetative cover which allows rainfall runoff to attain sufficient overland velocity to move substantial amounts of soil downslope.

Most of the study area lies within the Humboldt River basin, this area having an average annual precipitation of 10 inches, or 9.4 million acre-feet of water. The process by which water is lost



back to the atmosphere, (evapotranspiration) is estimated to be 9.3 million acre-feet annually within the basin. Only 10 percent of the precipitation ever becomes runoff or infiltrates into the ground water reservoirs (the largest of which lie within the alluvium of the valleys and flood plains). In turn, much of this runoff and ground water recharge is ultimately lost to evapotranspiration. The remaining 90 percent of the precipitation is lost directly to evapotranspiration, never entering the stream systems or the ground water reservoirs.

The Idaho portion of the study area drains into the Snake River, or into Salmon Falls Creek which discharges into the Snake River. Most of the Snake River water is diverted into canals during the irrigation season and is used for agricultural purposes.

Water uses in Idaho include: domestic usage (mostly from ground water sources), maintenance of livestock, irrigation (utilizing ground water and surface water), fishing, and production of electrical power along the Snake River.

Water uses in Nevada include: domestic usage, recreation, maintenance of livestock, and irrigation of cropland areas.

Table 2-2 p. , gives the average discharge in acre-feet per year (and the flow in cubic feet per second) at some active gaging stations along the Humboldt River, Marys River, North Fork of the Humboldt, and Salmon Falls Creek.

Water quality data is not generally available except along the larger waterways. Of special interest are the dissolved solids content (the total concentrations of chemical constituents dissolved in the water) and the suspended sediment discharge (particles suspended in the water), both measured in tons per day. At the Humboldt River gaging station near Rye Patch, the dissolved solids ranged from 27.9 to 39.1 tons per day between November 1973, and March 1974, and ranged from 259 to 877 tons per day between April and September 1974. The suspended sediment discharge was 3.1 tons per day when measured at that station in January 1974.

The suspended sediment discharge was measured at the Humboldt River gaging station near Imlay during January 1974 (1.2 tons per day), April 1974 (1140 tons per day), and July 1974 (86 tons per day). These dissolved solids and suspended sediment discharges are moderate when compared to those found in other rivers in the western United States.

Pesticides are in use on the croplands of south-central Idaho and on the croplands of the study area in Nevada. A small portion of these various pesticides are carried from these lands by runoff waters back into the larger waterway system. Quantification data



on concentrations and possible effects of these pesticides on the water quality is not available for the study area at this time.

TABLE 2-2  
AVERAGE RIVER AND STREAM DISCHARGE

STATION NAME	LOCATION	PERIOD OF RECORD	AVERAGE DISCHARGE
Humboldt River near Rye Patch	Lat. 40°28' Long. 118°18'	60 years	146,300 acre-ft/yr (202 cfs)
Humboldt River near Imlay	Lat. 40°41' Long. 118°12'	35 years	143,500 acre-ft/yr (198 cfs)
Humboldt River at Battle Mountain	Lat. 40°40' Long. 116°55'	32 years	243,400 acre-ft/yr (336 cfs)
Humboldt River near Elko	Lat. 40°56' Long. 115°38'	37 years	171,700 acre-ft/yr (237 cfs)
N. Fork Humboldt at Devil's Gate	Lat. 41°11' Long. 115°29'	39 years	53,610 acre-ft/yr (74.0 cfs)
Marys River above Hot Springs Creek	Lat. 41°15' Long. 115°15'	31 years	44,850 acre-ft/yr (61.9 cfs)
Salmon Falls Creek near San Jacinto	Lat. 41°56' Long. 114°41'	62 years	99,980 acre-ft/yr (138 cfs)

cfs = cubic feet per second

Data was compiled from "Water Resources Data for Nevada", 1974, prepared by U.S. Geological Survey.

## TOPOGRAPHY

The Nevada portion of the study area lies within the Great Basin (where all drainage leads to closed interior basins) and has the typical Basin and Range topography: elongated mountain ranges trend in a northerly direction and are separated by intervening valleys. The area is drained by the Humboldt River which flows generally west, ultimately discharging into the Humboldt Sink.

Near the Idaho border, the Basin and Range topography of the Great Basin merges with the Columbia Intermontane Province. All drainage in the southern Idaho portion of the study area is northward into the Snake River or into Salmon Falls Creek which discharges into the Snake River.

Most of the valleys in the Nevada portion of the area lie between 5,000 and 6,000 feet above sea level. The valleys near the Humboldt River have elevations below 5,000 feet.

The Idaho portion of the study area consists of plains in the vicinity of U.S. Highway 93, with alluvial fans east of the Hollister



area. Hilly uplands comprise the south end of Salmon Falls Creek, which with its canyon-like topography is sometimes as low as 400 feet below the elevation of the nearby plain.

To review the generalized terrain features of the study area, refer to the Study Area Map, p. 1-5 , and also see Chapter 3, p. 3-5 , Topography.

## GEOLOGY & MINERAL RESOURCES

### GEOLOGY

The generalized geology of the study area consists of sedimentary rocks of the Paleozoic Era (230 to 600 million years ago) covered by volcanic and sedimentary rocks of the Tertiary Period (approximately 3 to 70 million years ago). Alluvium has formed stream channel deposits, flood plains, stream terraces, and alluvial fans.

Tertiary volcanics -- rhyolite flows, tuffs, and breccias, as well as some basalts -- comprise much of the exposed bedrock in the study area. Talus slopes (angular broken rock fragments at the base of a cliff face) commonly occur in the study area. Tertiary sedimentary deposits of the Humboldt formation (unconsolidated gravels, silts, and sands, and poorly consolidated conglomerates and sandstone) are interbedded with the tertiary volcanics.

The higher elevations in the southern Idaho portion of the area consist of volcanics of silicic composition in the forms of tuff, welded ash, and lava flows. Younger basalt has flowed over some of these rocks at lower elevations and to the north. Salmon Falls Creek and the Snake River have eroded canyons into the volcanic rock. For specific locations, refer to the Generalized Geology Map, p. 2-9 .

### MINERAL RESOURCES

Most of the mineralization in the Nevada portion of the study area consists of metallic ore deposits related to igneous bodies of rock. Deposits in sedimentary carbonate rocks (such as limestone) include gold-silver, lead-silver, lead-zinc-silver, manganese-nickel, and antimony. Some deposits of gold and copper occur in shale and chert. Silver-lead veins often occur in volcanic rock. Gold-silver deposits are also associated with igneous intrusives (such as granodiorite). Deposits of barite ( $\text{BaSO}_4$ ), used by the oil companies in drilling muds, can be found in a 50- to 75-mile-wide northeast-trending barite belt which extends across northern Lander County into Elko County.

Some geothermal potential exists in the area, most notably near Beowawe, although there has not yet been any commercial development for the production of electrical power.



In the southern Idaho portion of the study area, only sand and gravel occur in significant concentrations as to be economically valuable.

### GEOLOGIC HAZARDS (SEISMICITY)

The portion of the study area west of Battle Mountain passes through seismic zone 3, denoting possible major damage from earthquakes. The area east of Battle Mountain in Nevada and extending into Idaho is seismic zone 2, denoting possible moderate earthquake damage. The most seismically active areas are in western Nevada and include the Stillwater Range, Tobin Range, Clan-Alpine Range, Fairview Peak, Excelsior Mountains, and Gabbs Valley Range. Earthquakes with epicenters in these areas may be felt in portions of the study area.

Block faulting (the movement of large blocks of the earth's crust along fault lines) is responsible for earthquakes within the Basin and Range topography, and has continued since early Tertiary time (almost 70 million years). Refer to the Seismic Risk Map, p. 2-11 for delineation of seismic zones in the study area.

### SOILS & WATERSHED

The soil medium of the existing environment is basic to all life in the study area. Soil formation is generally a result of parent mineral material being acted upon by the climate over a period of time and conditioned by topography and various organisms. It physically supports the existing vegetation and by its interaction with the total environment regenerates itself. Soil is also the basic component of a watershed which conducts and detains natural waters that are applied to the earth's surface by the climate.

According to the present soil classification system, most of the soils in the study area will fall into three of the ten soil orders, Mollisols, Entisols, and Aridisols. These are further described in Appendix C, p. 10-17

The Erosion Hazard Map illustrates erosion hazards based on projected damage to the soil (wind and water erosion) after vegetative cover is reduced or destroyed.

Because of the absence of detailed Standard Soil Survey data over more than half of the study area, the entire area is divided into 12 soil groups based on topography, parent material, and a minimum of soil data from low intensity soil surveys. The soil groups are described on a soil association basis. All of the soils in a group share more common characteristics than they do with soils from other groups, even though some soils do occur in more than one group. The Soil Groups Map, p. 2-17 shows the location of the





#### ALLUVIUM

YOUNG MATERIALS, BELIEVED TO BE MORE THAN 1,000 FEET THICK, OVERLYING OLDER BEDROCK, MOSTLY VALLEY-FILL GRAVELS, WITH MINOR INTERBEDDED LAVA FLOWS AND TUFF BEDS.

YOUNG MATERIALS, BELIEVED TO BE LESS THAN 1,000 FEET THICK, OVERLYING OLDER BEDROCK, MOSTLY VALLEY-FILL GRAVELS AND OTHER SEDIMENTS, BUT AREAS OF QUATERNARY BASALT FLOWS AND TERTIARY LAKE BEDS ARE INCLUDED.

#### TERTIARY VOLCANIC ROCKS

LAVA FLOWS AND TUFFS, MOSTLY OF LATE TERTIARY AGE.

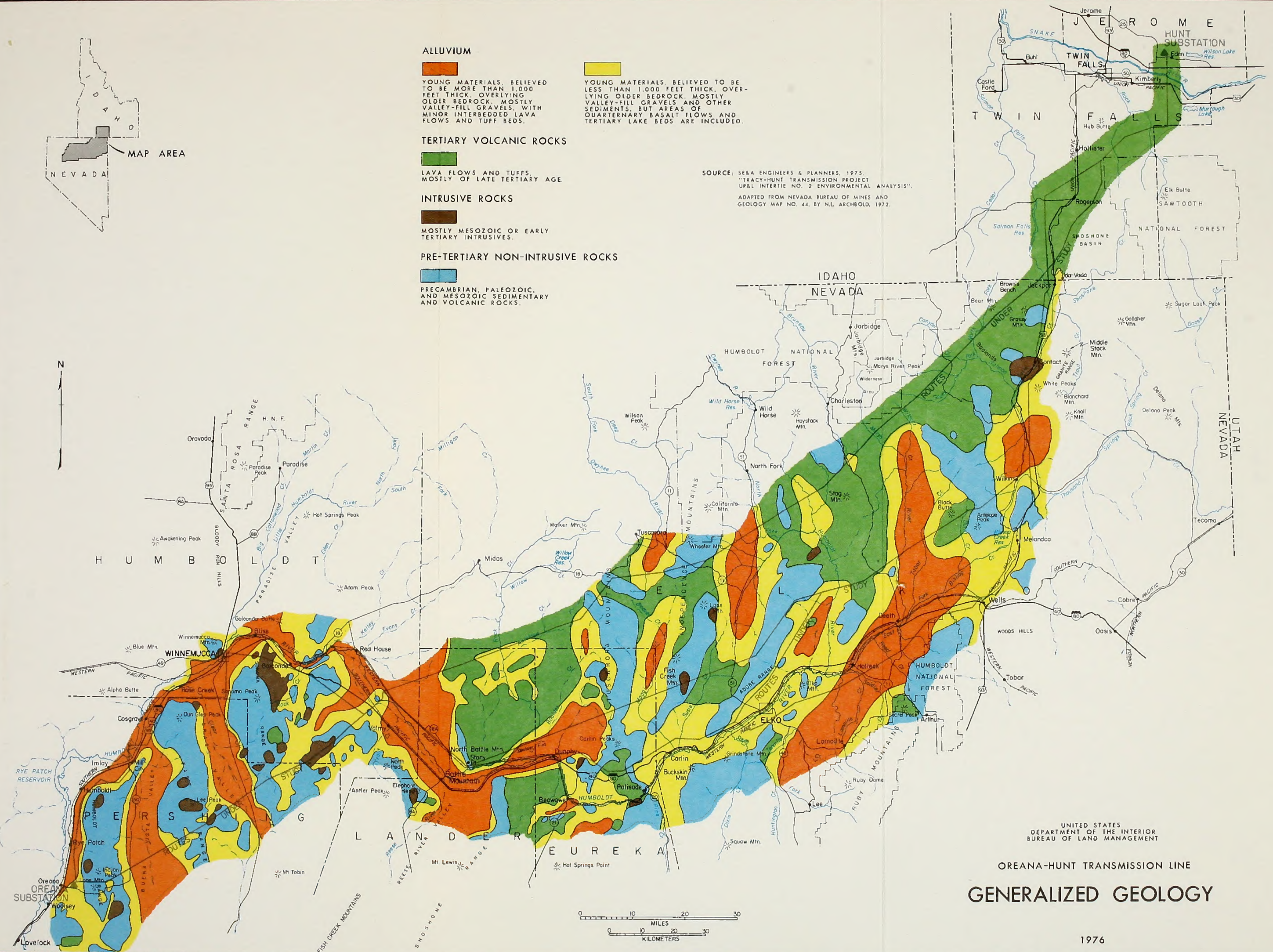
#### INTRUSIVE ROCKS

MOSTLY MESOZOIC OR EARLY TERTIARY INTRUSIVES.

#### PRE-TERTIARY NON-INTRUSIVE ROCKS

PRECAMBRIAN, PALEOZOIC, AND MESOZOIC SEDIMENTARY AND VOLCANIC ROCKS.

SOURCE: S&A ENGINEERS & PLANNERS, 1975, "TRACY-HUNT TRANSMISSION PROJECT UP&L INTERIE NO. 2 ENVIRONMENTAL ANALYSIS".  
ADAPTED FROM NEVADA BUREAU OF MINES AND GEOLOGY MAP NO. 44, BY N.L. ARCHOLD, 1972.



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

## OREANA-HUNT TRANSMISSION LINE GENERALIZED GEOLOGY

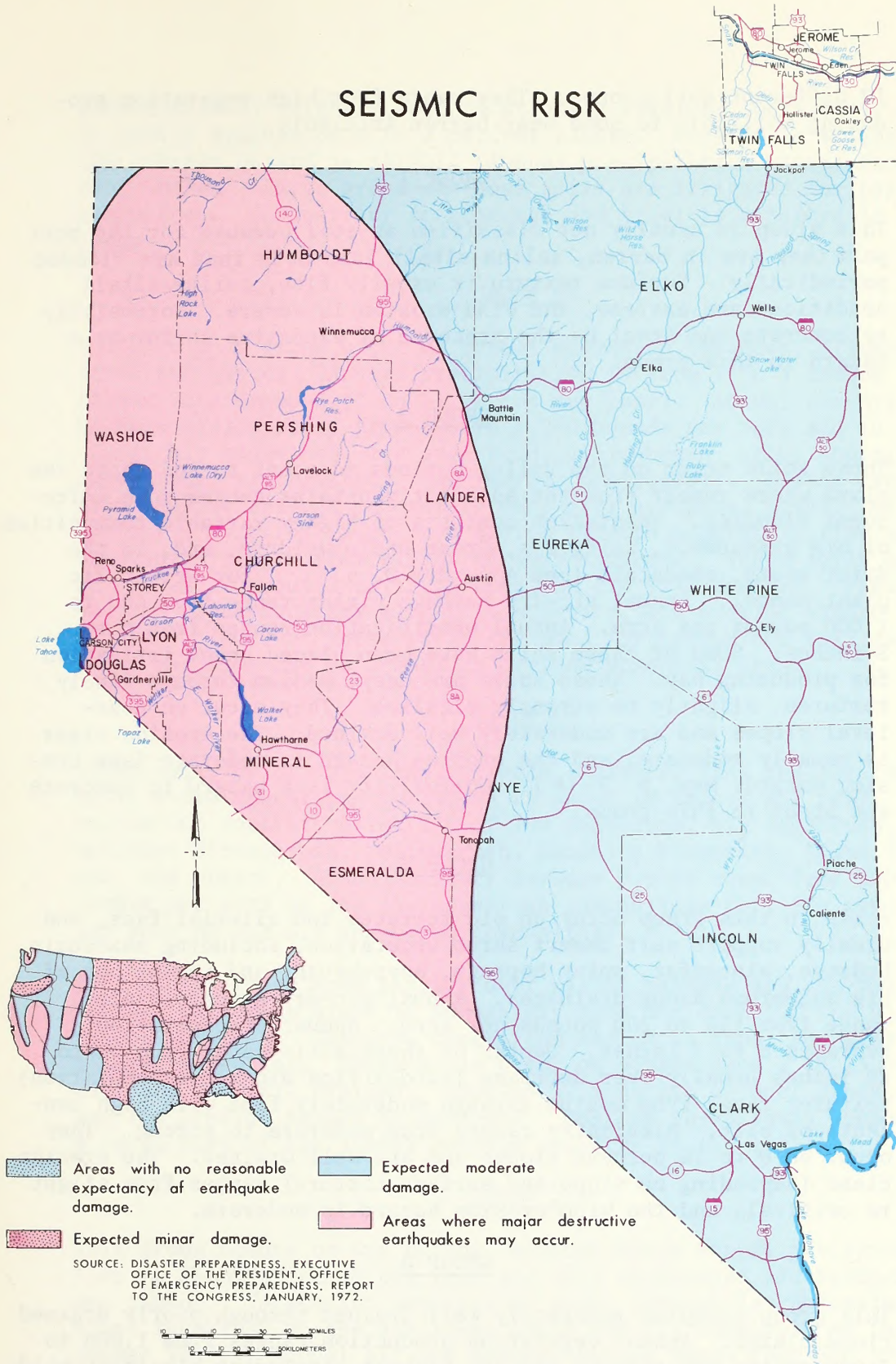
1976







# SEISMIC RISK



12 different soil groups. They range from high-vegetation producing Mollicols to some near-barren Aridisols.

#### GROUP 1

This group is usually not classified as soil because for the most part they are in barren, saline-alkali lake beds that are flooded periodically. Surface texture is usually fine, saline-alkali conditions are extreme, and wind erosion is severe. Corrosivity to concrete and steel by the presence of excessive sulfur is a hazard in this group.

#### GROUP 2

These soils occur on the valley bottoms adjacent to and above the playa where runoff from the adjacent mountains causes some infrequent flooding. Vegetation consists of highly variable communities of big greasewood, saltgrass, Great Basin wildrye, and, in the drier areas, shadscale (see Appendix D, p.        for scientific plant names). Annual air-dry herbage yields range from 400 to 1,000 pounds per acre. Annual precipitation ranges from 6 to 8 inches. Some of these soils have been placed under irrigation for producing hay. These soils are deep, medium through finely textured, slightly to strongly alkaline. They occur on near-level slopes and are moderately well drained. The erosion class is usually moderate, and the erosion hazard is moderate (see Erosion Hazards Map, p. 2-19). Corrosivity is a hazard to concrete and steel in this group.

#### GROUP 3

Soils in this group occur on old terraces and alluvial fans, and usually support salt desert shrub vegetation, including shadscale, budsage, winterfat, spiny hopsage, horsebrush, and inclusions of big sagebrush along drainages. Annual air-dry herbage yields range from 150 to 200 pounds per acre. Annual precipitation averages 6 to 7 inches. Depths of these soils range from 12 to 20 inches usually over duripans (hard-silica dioxide accumulation); textures range from medium through moderately fine with high contents of silt. Alkalinity ranges from moderate to strong. They occur on 0 to 15 percent slopes and are well drained. The erosion class (depending on slope and surface texture) ranges from slight to critical, and the wind erosion hazard is moderate.

#### GROUP 4

This group occupies moderately well drained through poorly drained flood plains. Annual vegetation production ranges from 1,000 to 3,000 pounds per acre of air-dry herbage, including bluejoint wildrye, Great Basin wildrye, saltgrass, big greasewood, willow, and several species of forbs. Soil profiles are deep, coarse through



fine-textured, slightly acid to strongly alkaline, moderately well to poorly drained on 0 to 2 percent slopes. Erosion is slight and the erosion hazard is slight. Annual precipitation ranges from 6 to 8 inches. Large areas of these soils are irrigated for hay production. Corrosivity to concrete and steel is a hazard in this group.

#### GROUP 5

Soils in this group occur on higher elevation terraces, alluvial fans, and basins. Annual precipitation is from 2 to 4 inches higher than Group 3 (7 to 11 inches per year). Annual air-dry herbage yields range from 500 to 1,200 pounds per acre and includes big sagebrush, low sagebrush, yellowbrush, spiny hopsage, cheatgrass, squirreltail, and Thurber needlegrass. Depths range from shallow through moderately deep over hardpans, gravel, or bedrock. Textures range from medium through moderately fine and alkalinity ranges from slight through moderate. These soils occur on slopes of about 2 to 15 percent and are well drained. Present erosion conditions are slight to moderate, and erosion hazard is moderate. Most of these soils are used for spring and fall range-land, and some can be seeded to dryland perennial grass.

#### GROUP 6

These soils occur on upland terraces, alluvial fans and low foothills where annual precipitation is about 12 inches per year. Vegetation consists primarily of low sagebrush, big sagebrush, antelope bitterbrush, yellowbrush, Sandberg bluegrass, Idaho fescue, and others. Annual air-dry herbage yields range from 500 pounds per acre on the low sagebrush communities to 1,500 pounds per acre on the big sagebrush communities.

Soil depths range from shallow over silica hardpan and claypan in the low sagebrush areas to moderately deep and deep for the big sagebrush areas. Textures range from medium to fine, and alkalinity is neutral. These soils occur on slopes from 2 to 15 percent and are well drained. Erosion is moderate on most areas, and the erosion hazard is moderate. Most of these soils support a large part of the summer grazing industry in the region.

#### GROUP 7

This group occurs on dry upland terraces where annual precipitation is about 8 inches per year and soil carbonates and hardpans are common. Vegetation consists of plant communities dominated by black sagebrush on the shallower soils and big sagebrush on the deeper soils. Annual air-dry herbage yields range from 350 pounds per acre on the shallow soils to about 750 pounds on the deeper soils. Textures are medium to moderately fine, alkalinity is



moderate, drainage is good, and slopes range from 2 to 30 percent. Erosion is moderate in most areas, and erosion hazard is moderate.

#### GROUP 8

These soils occur on old lava plains and alluvial fans that have been covered to varying depths by wind-transported soil particles known as loess. Group 8 soils are high-producing agricultural land when within reach of irrigation facilities. The original vegetation was composed of communities of big sagebrush and perennial grass. These soils are moderately deep over volcanic flow rock and are medium to moderately fine textured. Alkalinity is slight to moderate because of the presence of calcium carbonate weathering from the basaltic parent material. They occur on slopes ranging from 2 to 8 percent and are well drained. Erosion is slight to moderate depending on present use and vegetative cover, and the erosion hazard is moderate. Most of these soils support irrigated agriculture in southern Idaho.

#### GROUP 9

These soils occur on moderately steep and steep (16 to 51 percent) mountains, primarily along the southern flank of the region. This group differs from the other mountainous groups (10 and 11) by virtue of having less annual precipitation. Additionally, Group 9 differs from Group 11 in that the granodiorites are usually absent in Group 9, and most of the geologic material in this group is mixed basic igneous, metamorphic, and sedimentary material, whereas Group 11 is primarily granitic.

Vegetation is highly variable, and like the majority of soils in this region, this group primarily supports sagebrush and its associated plant species. Total annual air-dry herbage yields range from less than 100 pounds per acre on shallow gravelly soils to more than 3,000 pounds per acre on deeper soils. Annual precipitation ranges from 10 to 15 inches. Soil depths range from 6 inches over bedrock on some high elevation ridges to more than 60 inches on some steep canyon side slopes. Textures range from medium to fine, depending on soil parent material. These soils are neutral to slightly acid, except where limestone-derived, occur in small inclusions, and pH runs as high as 8.2, or moderately alkaline. Group 9 soils are well drained, erosion ranges from slight to severe depending on slope, soil texture, and past treatment. Erosion hazard is severe. These soils are primarily used for producing vegetation for summer grazing by livestock.

#### GROUP 10

This group of soils occurs on the highest elevations, and consequently receives the most annual precipitation. This group yields more vegetation per acre than any other group except 4, where



perennial water table effect is coincidental with high vegetative yields. Yields in this group range from about 400 pounds on shallow wind-swept ridges to 2,500 pounds per acre on deeper soils in basins and canyon side slopes. Soil textures range from medium to moderately fine, and very fine on some volcanic material. Soil reaction is slightly acid to neutral, drainage is good, and slopes range from 4 percent on ridge tops to 70 percent on canyon side slopes.

Erosion ranges from stable on some mountain meadows to severe along most perennial drainages, and erosion hazard is severe. Annual precipitation ranges with elevation from 12 to 25 inches. These soils are the primary watersheds of the region. The vegetation they support is used mainly by mule deer and livestock.

#### GROUP 11

This mountainous group occurs in minor amounts in the region and in two larger areas near the Nevada-Idaho border and near Wells, Nevada. It differs from Group 10 in that the soil parent material is granitic intrusive that helps develop coarse textured soils. They absorb water much faster than the normal finer textured soils. This characteristic usually induces higher yields of vegetation if the soil depth is sufficient for adequate water retention. Soils in this group are similar to those in Groups 9 and 10 in many respects, but soil textures are coarse and moderately coarse compared to finer textures on Groups 9 and 10.

Erosion is less on Group 11 because the water is absorbed into the soil faster. Most of the soil taxonomic units are similar to those in Group 10, except the subsoil textures fall into the loamy and coarse families. Slopes range from 4 to 70 percent and drainage is adequate. Annual precipitation ranges from 10 to 20 inches. Erosion is slight to severe, and erosion hazard is severe. These soils support vegetation used primarily for summer grazing by livestock and mule deer.

#### GROUP 12

This area occurs in southern Idaho on an old volcanic plain adjacent to Group 8 soils that are primarily used for farming. These soils are highly variable and for the most part unidentified, ranging from shallow (over bedrock and duripan) to deep alluvials along the drainages and in basins. The shallow soils occur on ridges and near rock outcrops. They are medium through fine textured, neutral to mildly alkaline, and occur on slopes ranging from 16 to 51 percent. They are well drained and fertile. Average annual air-dry herbage yields range from 300 to over 1,000 pounds per acre, depending on soil depth. The native vegetation consists primarily of big sagebrush, low sagebrush, bluebunch wheatgrass, Thurber's needlegrass, cheatgrass and Sandberg blue-



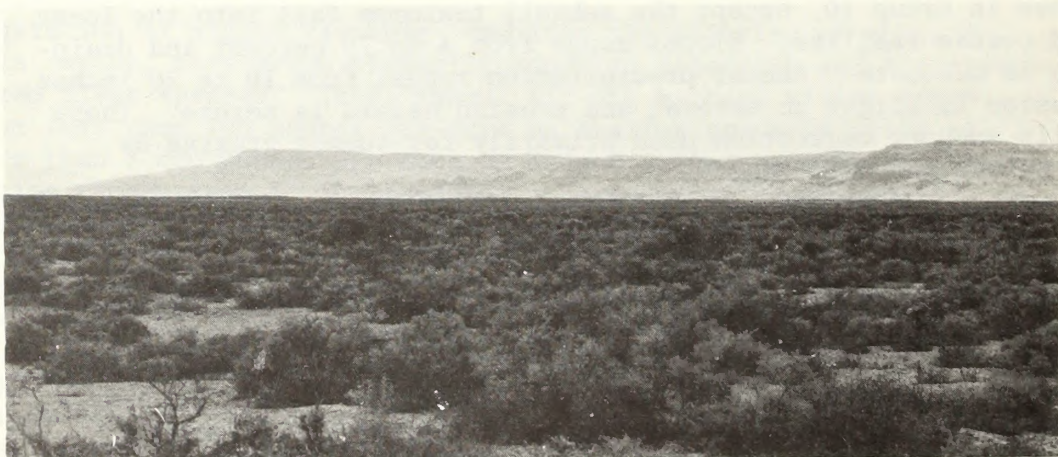
grass. Rock outcrops and stony surfaces are common. Erosion ranges from slight to moderate and erosion hazard is severe. The area is used primarily by mule deer and livestock during the growing season.

## VEGETATION

The study area includes a number of vegetative types ranging from salt desert shrub at the lower elevations to mountain shrub and aspen at the higher elevations. (See the Vegetation Map, p. 2-27.) Most of the area is covered by the northern desert shrub type characterized by sagebrush species. Occasional crested wheatgrass seedings are interspersed among the vegetative types.

Scattered agricultural areas are also found in the region, especially in the Idaho portion. These are described in the Land Use Section, p. 2-37. Appendix D, p. 10 21 lists some of the characteristic plants of the various vegetative types in the area.

Following is a discussion of vegetative types and communities in the study area. Although discussed separately, vegetative communities frequently overlap or are intermingled, with some species found in several of the communities. This information was derived from field investigations, BLM District resource inventories, and reports such as those prepared by Forest, Range and Watershed Consultants, Inc. (see Bibliography). Capabilities for revegetation are briefly mentioned, and are covered in more detail in Appendix E., p. 10-27.



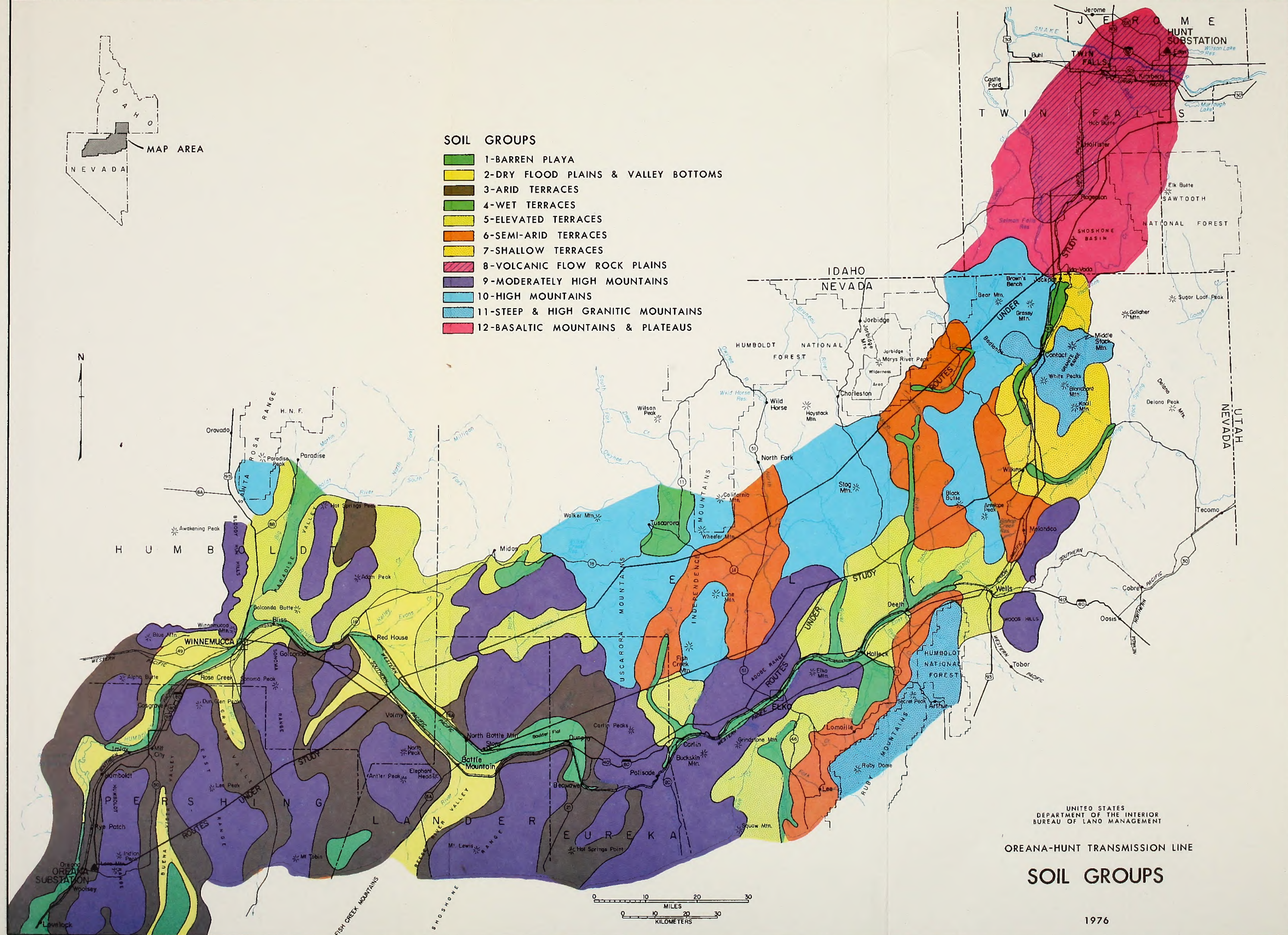
*Typical salt desert shrub vegetative type. Boulder Flat Valley, near Battle Mountain, Nevada.*





### SOIL GROUPS

- 1-BARREN PLAYA
- 2-DRY FLOOD PLAINS & VALLEY BOTTOMS
- 3-ARID TERRACES
- 4-WET TERRACES
- 5-ELEVATED TERRACES
- 6-SEMI-ARID TERRACES
- 7-SHALLOW TERRACES
- 8-VOLCANIC FLOW ROCK PLAINS
- 9-MODERATELY HIGH MOUNTAINS
- 10-HIGH MOUNTAINS
- 11-STEEP & HIGH GRANITIC MOUNTAINS
- 12-BASALTIC MOUNTAINS & PLATEAUS



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OREANA-HUNT TRANSMISSION LINE

### SOIL GROUPS

1976



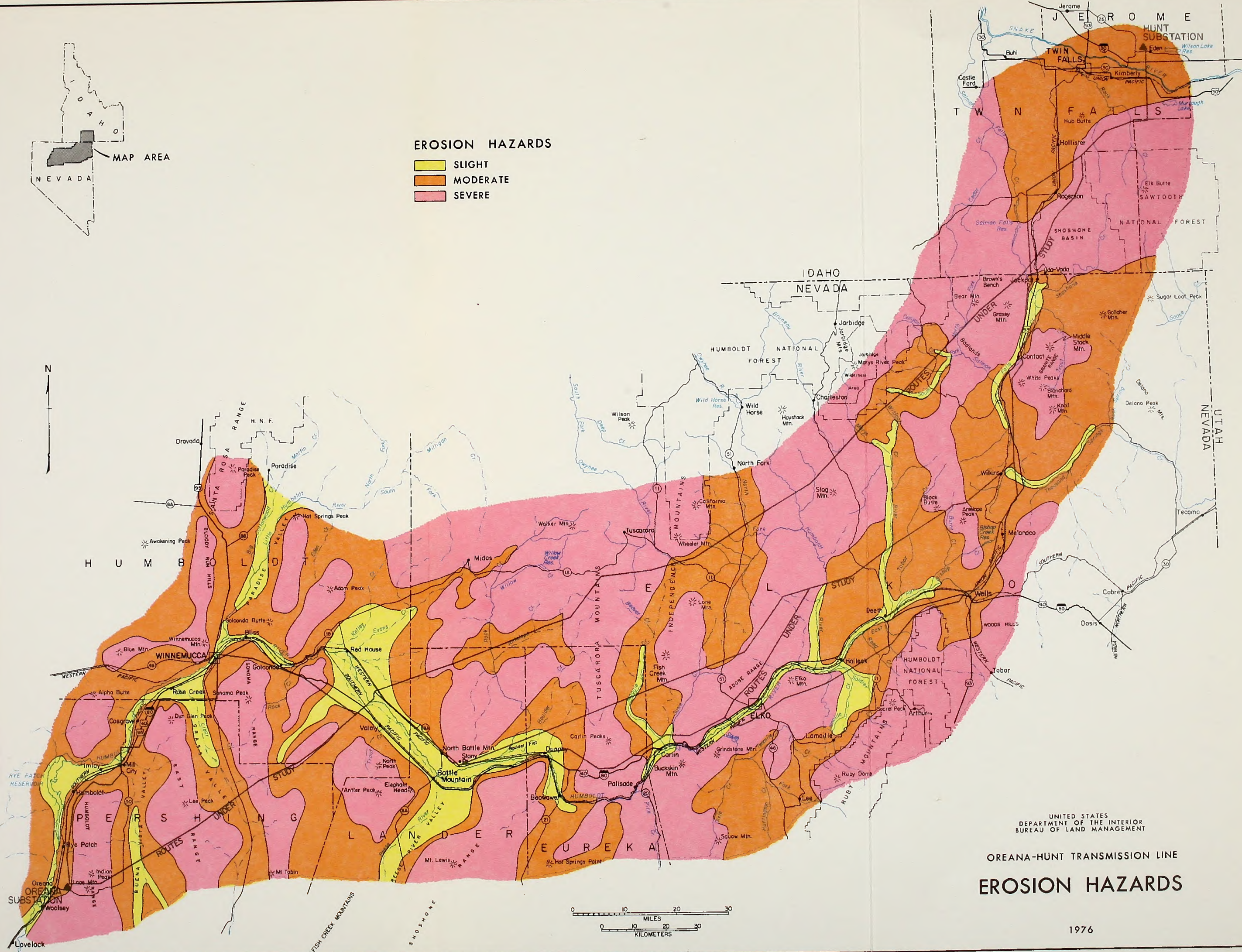






# EROSION HAZARDS

- SLIGHT
- MODERATE
- SEVERE



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## OREANA-HUNT TRANSMISSION LINE EROSION HAZARDS

1976







## SALT DESERT SHRUB

### BIG GREASEWOOD COMMUNITY

This community is found on the flood plains along the Humboldt River and in other areas frequently associated with a higher water table (18-36 inches). Although most often found in these areas, big greasewood can also be found in areas where the water table is deeper (in excess of 5 feet).

Shadscale is a co-dominant species in this community where the water table is deeper, but where the water table is close to the soil surface, big saltbrush, rubber rabbitbrush, and saltgrass increase in abundance. Other species also occur, but in smaller numbers. Revegetation of this community is difficult largely due to the adverse soil conditions and arid climate (Rollins, et al. 1968).

### SHADSCALE COMMUNITY

This community is found on alluvial fans along the top slopes of the mountain ranges in the study area generally from Oreana to Beowawe. Two specific areas are the Buena Vista Valley and Grass Valley.

Several associations of plant species are found in this community, such as shadscale/budsage and dryland greasewood/shadscale. Cheatgrass is the most abundant species in the understory. A number of additional shrubs and grasses, as well as forbs, are found scattered in small numbers. The annual weed halogeton frequently invades areas where the soil has been disturbed. Revegetation of this community is difficult to impossible, the most limiting factor being the arid climate of the area (Bleak, et al. 1965).

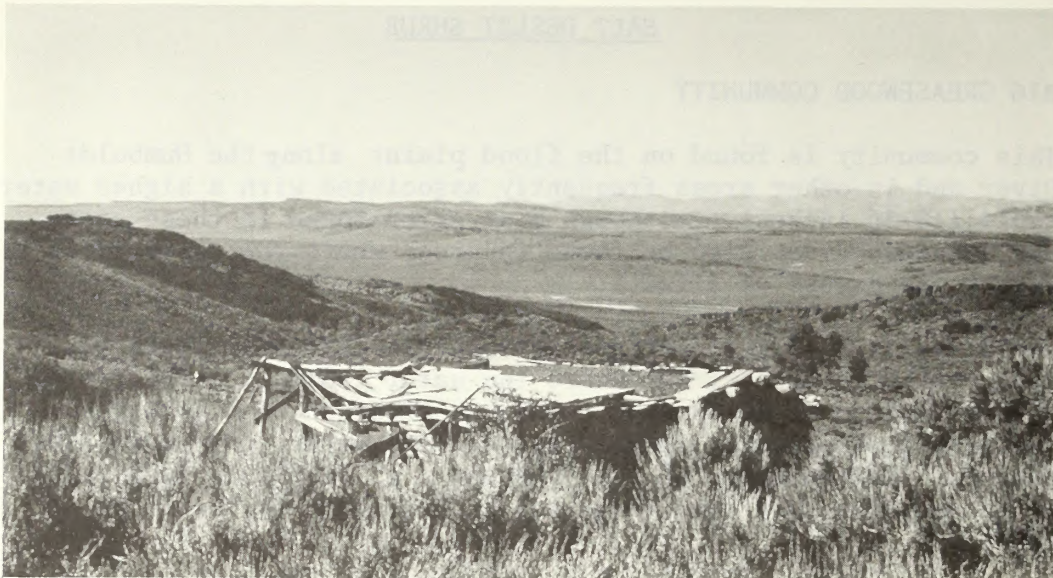
## NORTHERN DESERT SHRUB

### BIG SAGEBRUSH COMMUNITY

A major portion of the study area (generally the area east of the Humboldt County line) falls in the big sagebrush community. This community is diverse, occurring on flood plains, terraces, ridges, and mountain slopes.

The associated vegetation varies with the location and growing conditions, and includes (in separate associations) bluebunch wheatgrass, cheatgrass, rubber rabbitbrush, yellowbrush/sandberg bluegrass, and Idaho fescue. Other shrubs and grasses are found unevenly distributed in small numbers. Revegetation of this community can be fairly easy using standard revegetation techniques.





*Northern desert shrub type - big sagebrush  
in the foreground. O'Neil Basin area,  
Nevada.*

#### LOW SAGEBRUSH COMMUNITY

The low sagebrush community is found at the higher elevations on ridges, mountain slopes, and some alluvial fans. It is often dispersed with the big sagebrush community, although the low sagebrush type typically is found on shallower, rockier, and finer textured soils. Other shrubs are found in small numbers, and a large number of forbs are scattered throughout the community. Revegetation of the low sagebrush community can be moderately difficult, depending on soil, slope, and stoniness.

#### MEADOW/RIPARIAN COMMUNITY

The meadow/riparian community is found along creeks, river bottom drainages, and flood plains. For the most part, the community lines the waterways in narrow strips from a few feet wide up to 3 miles wide. In some areas bordering the salt desert shrub type, it intermingles with the big greasewood community. Willow and Wood's rose are common shrubs in the community, with an understory of meadow grasses, rushes, sedges and numerous forbs. Revegetation of the meadow/riparian community is fairly easy.

#### WOODLAND

#### JUNIPER COMMUNITY

The Juniper community occurs extensively on the Humboldt and East Ranges and in scattered patches in the rest of the study area.



The dominant species is Utah juniper and occurs throughout the community. Big sagebrush and yellowbrush are abundant in the shrub layer, with other shrubs occurring in varying amounts. Because of the steep slopes and/or cheatgrass, this community may be fairly hard to revegetate.



*Northern desert shrub - low sagebrush in the foreground. Scattered mountain shrub type and aspen in the background. Brown's Bench near the Nevada-Idaho line.*

#### MOUNTAIN SHRUB COMMUNITY

Mountainous portions of the study area, from the Tuscarora mountains eastward, contain patches of mountain shrubs such as curl-leaf mountain mahogany, bitterbrush, serviceberry, and snowbrush. Big sagebrush is also common. Other shrubs, grasses, and forbs also occur in small numbers. Revegetation of this community can be fairly successful using standard revegetation techniques (when topography permits).

#### ASPEN COMMUNITY

Aspen occurs in small patches throughout high mountainous basins and along water courses in the region primarily east of the Tuscaroras. Most of the mountain shrubs are also found scattered in varying amounts throughout the aspen community. Slender wheatgrass is usually one of the most abundant grasses although a variety of other grasses and forbs are also found, unless the site



has been overgrazed. Portions of this community may be fairly easily revegetated depending on slope and soil conditions.



*A portion of the Humboldt River near Elko, Nevada, showing the riparian habitat.*

#### THREATENED OR ENDANGERED PLANT SPECIES

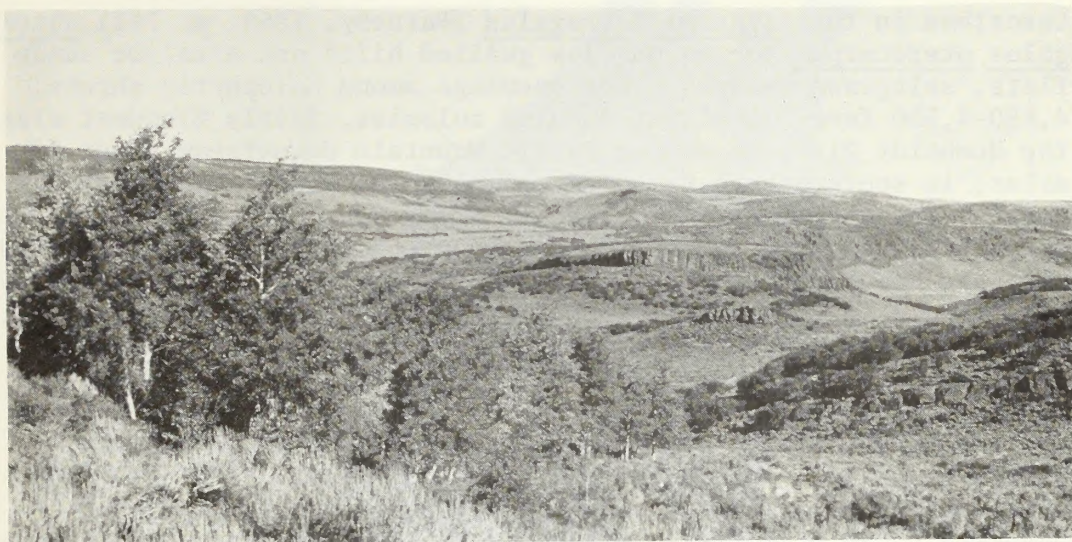
On July 1, 1975, a Notice of Review released by the U.S. Fish and Wildlife Service appeared in the Federal Register, requesting comment on the status of over 3,000 vascular plants of the United States. Possibly threatened or endangered plants identified by the Smithsonian Institution were included, 127 of them from Nevada. As a result of further research and comments received in response to their request, the U.S. Fish and Wildlife Service published a Proposed Rulemaking of endangered plants in the Federal Register of June 16, 1976 (50 plants from Nevada). These regulations are still pending.

The following discussion is centered around those plant species proposed as endangered in the latter Federal Register release and those listed as threatened in the former. The information presented is a result of a literature survey, investigation of herbarium collections, and data compiled by other agencies and groups,



such as the U.S. Forest Service and the Northern Nevada Native Plant Society.

Threatened or endangered plant species in the vicinity of the proposed transmission line corridors were identified according to the best data available. Information beyond that appearing below concerning vigor, distribution, and other factors was not available. The reader is referred to the Vegetation Map, P. 2-27, for approximate locations.



*Aspen (foreground) and mountain shrubs (middle-ground) overlooking the O'Neil Basin area of Nevada.*

#### ENDANGERED

Astragalus porrectus, as described in the Atlas of North American Astragalus (Barneby, 1964, p. 566), is found in "hot gravelly washes and outwash fans in the foothills of desert mountains, in volcanic sand or rock debris, 4,300-5,000 feet, rare and local, known only from the lower Humboldt and Truckee valleys in Churchill, Pershing, and southern Washoe Counties, Nevada." Two other references to Astragalus porrectus describe the plant from "the Trinity Mountains, 5,000 feet" (Watson, 1871, p. 75) and being "collected seldom and restricted in range to the bed of Lake Lahontan, the body of water that covered a large part of westcentral Nevada at intervals during the Pleistocene" (Bulletin of the Torrey Botanical Club, 51:19, 1924 quoted by Barneby, 1964, p. 567). One herbarium collection notes the plant from the West Humboldt Mountains, east of Woolsey, in a gravelly wash at 4,650-5,000 feet (Ripley 5646).



One reference to a location of Eriogonum anemophilum within the study area was found. Pittonia, Vol. III, p. 199-214, 1897, reports an 1894 collection "on bleak windy summits at the northern end of the West Humboldt Range, Nevada". Machaeranthera leucanthemifolia is described in an 1896 issue of Pittonia as found in the West Humboldt Mountains, Nevada. Numerous herbarium specimens show distribution of this species throughout Nevada. The endangered status of this plant is being questioned.

#### THREATENED

Described in the Atlas of Astragalus (Barneby, 1964, p. 791) Astragalus pterocarpus occurs on "low gullied hills and alkaline sandy flats, saltgrass meadows, land openings among halophytic shrubs, 4,450-4,500 feet, local but forming colonies, fairly frequent along the Humboldt River from near Battle Mountain downstream about 10 miles, in southeastern Humboldt and adjacent Lander Counties, Nevada". Botany of the King Expedition (Watson, 1871, Vol. 5, p. 71) reports Astragalus pterocarpus "...near the junction of Reese River with the Humboldt". The Atlas of Astragalus further states (p. 792) "The winged milk vetch was said by Jones (Contrib. West. Botany 17:12) to have been obliterated at the type locality by 1930. However, a vigorous colony was still thriving at the mouth of the Reese River in the summer of 1944, and the species is certainly holding its own on the floodplain of the Humboldt River downstream from Battle Mountain". Herbarium collections show the plant from the above described areas and from areas 40 miles north of Battle Mountain to 80 miles west, with two other collections located considerably outside the study area.

Cryptantha interrupta was first collected eight miles east of Wells, in Elko County. It is apparently endemic to Elko County, and grows on clay soil in the pinyon-juniper community at altitudes of 5,000 -7,500 feet (Brigham Young University Science Bulletin 13(4):48, 1971). Other specimens were collected from Park's Station (Dinner Station) 25 miles north of Elko (Hitchcock, 1005-U.S.), Elko (Hitchcock, 929-U.S.) and Humboldt Wells, Elko County (Heller, 9185-Mo, NY, US, Phila.). (Payson, 1927, p. 297.)

Hitchcock (1941, p. 90-91) describes two varieties of the Federal Register listed Draba douglasii; however, only the type variety apparently occurs in the study area. As described by Hitchcock, Draba douglasii v. douglasii is "rare; on open rocky ridges and knolls in the foothills and lower mountains of south central Washington, eastern Oregon, and western Nevada; mostly at or below 4,000 feet". The Nevada material is reported from the "hills north of Reno", collected in 1896, and "45 miles southwest of Elko, in 1938". Numerous herbarium specimens are found. One specimen places it on the east side of Highway 11, 12.2 miles north of Dinner Station, near the junction to Tuscarora, at 6,340 feet (Howard B. Passey-UTC). The various collections show a fairly

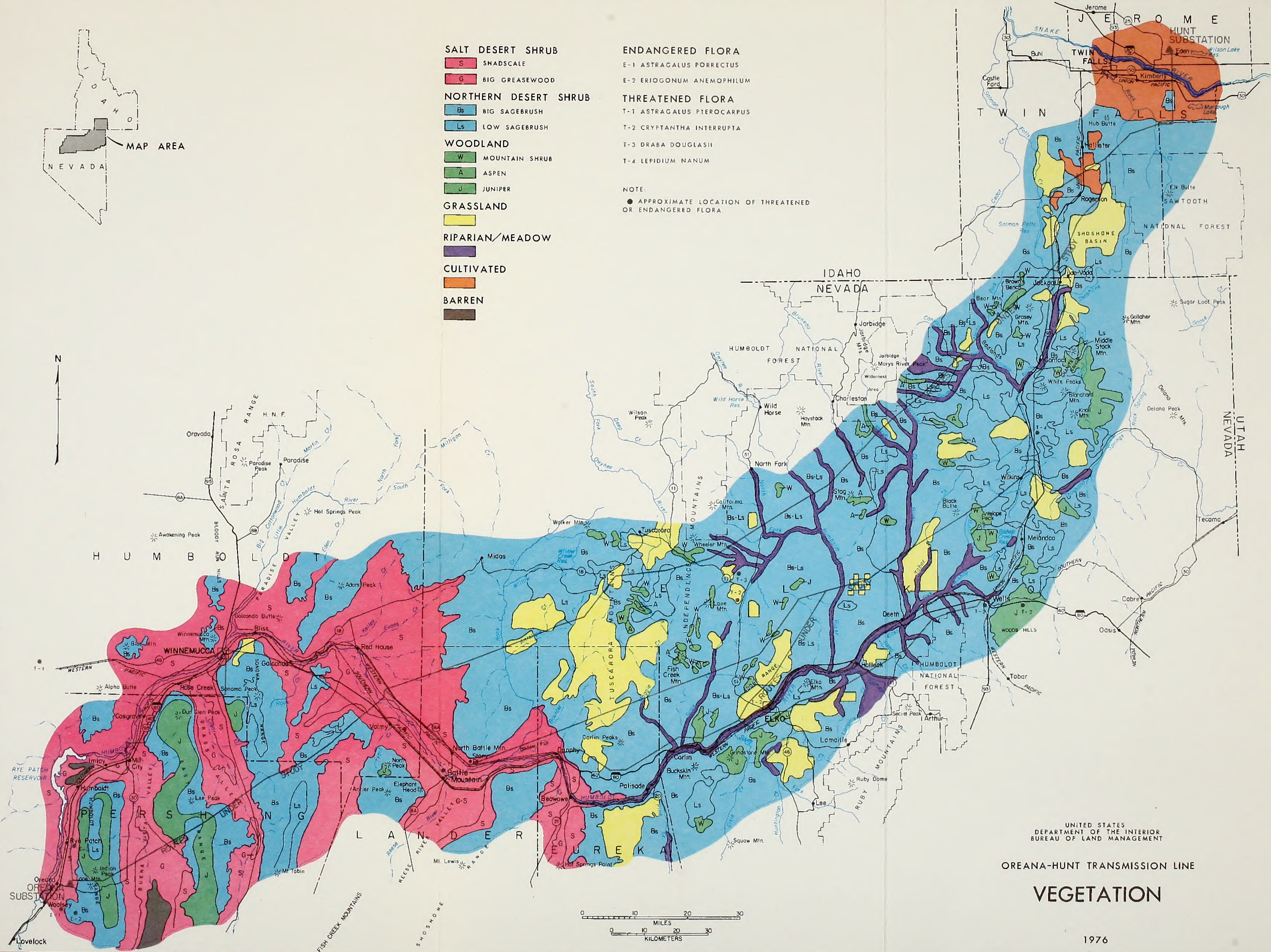




- SALT DESERT SHRUB**
- S SHADSCALE
  - G BIG GREASEWOOD
- NORTHERN DESERT SHRUB**
- Bs BIG SAGEBRUSH
  - Ls LOW SAGEBRUSH
- WOODLAND**
- W MOUNTAIN SHRUB
  - A ASPEN
  - J JUNIPER
- GRASSLAND**
- Yellow box
- RIPARIAN/MEADOW**
- Purple box
- CULTIVATED**
- Orange box
- BARREN**
- Brown box

- ENDANGERED FLORA**
- E-1 ASTRAGALUS PORRECTUS
  - E-2 ERIOGONUM ANEMOPHILUM
- THREATENED FLORA**
- T-1 ASTRAGALUS PTEROCARPUS
  - T-2 CRYPTANTHA INTERRUPTA
  - T-3 DRABA DOUGLASII
  - T-4 LEPIDIUM NANUM

NOTE:  
● APPROXIMATE LOCATION OF THREATENED OR ENDANGERED FLORA.



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OREANA-HUNT TRANSMISSION LINE  
**VEGETATION**









wide (or scattered) distribution of this plant, under different growing conditions.

Lepidium nanum, a pepperweed, has been reported from several areas in Nevada, two of which are in the study area. Herbarium collections, show one 35 miles north of Wells, on open sagebrush flats (Hitchcock, 18987-UC 931654) and the other 10 miles north of the Hubbard CCC Camp (T43N R63E Sec. 25) on the Wells-Twin Falls highway (A. Holmgren, 781-UC 676575).

## WILDLIFE

The study area contains a wide diversity of wildlife including mammals, birds, amphibians, reptiles, and fish. (See Appendix F, p.10-37 for wildlife species list.) Wildlife habitat is closely aligned with the vegetative zones discussed in the previous section. However, many wildlife species range into two or more vegetative types and several plant communities. Few species are so specific as to be completely dependent on a single vegetative type.

## TERRESTRIAL

Significant populations of mule deer exist throughout the study area, being seasonally abundant in most of the mountainous areas. Localized year-long populations of mule deer do exist along the Humboldt River.

The north-south oriented mountain ranges typical of the Great Basin and much of the eastern portions of this area serve as migration routes for many thousands of mule deer which winter on the lower elevational ranges. Mule deer migration within Elko County is complex and is characterized by movement corridors of 40 to 60 miles between summer ranges and critical winter ranges, with some movement corridors exceeding 100 miles. Deer migration on the western portion of the study area, west of Battle Mountain, involves merely an elevational movement by season. This area takes in the Humboldt, East, Sonoma, Tobin, and Buffalo Mountain ranges.

Mule deer summer ranges in Elko County, Nevada and Twin Falls County, Idaho include the Tuscarora Mountains, Independence Mountains, Jarbidge Mountains, Stag Mountain, Snake Range, Upper O'Neil Basin, Brown's Bench, and the South Hills.

Mule deer commonly concentrate in winter ranges which are normally restricted in size by topography and snow depth. Mule deer winter use on these areas has been reported to exceed 100 deer-use days per acre. (1 deer-use day = one deer subsisting for one day.) The critical mule deer wintering areas are typified by big sagebrush - low sagebrush - bitterbrush associations. These areas include the Adobe Range, Sheep Creek Range, Cortez Mountains,



south portions of the Tuscarora Range, Elko - Carlin Hills, East Humboldt Range, Wood Hills, Ellen D, and the Granite Mountains near Contact, including the lower portion of O'Neil Basin and the lower elevational portion of the South Hills. (See the Big Game and Fisheries Map, p. 2-33.)

Antelope inhabit the valleys, foothills, and benchlands of the east portion of the study area. Critical ranges (shown on the Big Game and Fisheries Map) include the traditional kidding grounds visited by the females each year and the winter ranges which may be more or less restrictive dependent on the snow depth. Preferred antelope habitat is a diversity of vegetative types of native ranges having a preponderance of low-growing plants. Important kidding and summer habitat include the Tabor Creek Flat; the Snake Range and benchland; the O'Neil Basin - Brown's Bench, west of Jackpot; and the Brown's Bench to Shoshone Basin in Idaho.

Important mountain lion habitats are located in rough mountainous areas during the summer months and rough or juniper-covered foothills during the winter months. The mountain lion depends heavily on mule deer for food during much of the year and will follow the migrating deer herds. Known mountain lion habitats include the Humboldt, East, and East Humboldt Ranges, and the O'Neil Basin. Critical antelope winter habitat in Idaho includes the area between Brown's Bench and Salmon Falls Reservoir.

Predatory mammals common within the subject area are the coyote, bobcat, badger, weasel, and mink. The mink is closely associated with aquatic habitat and is found in significant numbers adjacent to streams and reservoir areas.

Several of the less common mammals within the area are the red fox, found in the Snake River drainage; the kit fox, found west of Battle Mountain; the raccoon and otter, found in the Humboldt and Snake River drainage; and the striped and spotted skunk which are sparsely distributed throughout the area.

A wide variety of small mammals are distributed in the various habitats of the study area. Common small mammals include ground squirrels, mice, pocket gophers, shrews, porcupine, cottontail and pigmy rabbits, and blacktailed jackrabbits. These animals provide a significant portion of the prey species base (food supply) for the predatory mammals, birds, and reptiles.

The passerine songbirds are the largest group of birds in the area, the most common species being the horned lark, western bluebird, and sage sparrow. Game birds include sage grouse, blue and ruffed grouse, chukar and Hungarian partridge, California quail, and mourning dove.



Critical habitat for sage grouse include the nesting complexes (generally in a 3 to 5 mile radius from the strutting grounds which are the focal point for breeding), sagebrush covered wintering areas, and the meadow complexes utilized for summer brood habitat. Because sage grouse are so closely aligned to sagebrush vegetative areas, critical habitat is extensive throughout the upper valleys and upland areas from the Sonoma and Tobin Ranges on the southwest, to the northern foothills of the South Hills in Idaho on the northeast. An additional critical sage grouse habitat has been indicated in the Humboldt Range near Lone Mountain.

Critical habitat for chukar, Hungarian partridge, and California quail is associated with permanent water sources. Pheasant habitat and populations exist along the Humboldt River in various levels of importance from Dunphy downstream to Lovelock. Mourning doves are widely dispersed throughout the area; however, concentration areas are in the vicinity of available water and small grain producing agricultural areas. Blue and ruffed grouse within the area have a very limited distribution and are associated with the quaking aspen and mountain brush vegetation. Habitat areas for blue grouse include the Tuscarora Range, Stag Mountain, Snake Mountains, and the East Humboldt Range, while the ruffed grouse are found only on the northern portion of the East Humboldt Range.

Scavenger birds include the magpie, crow, raven, and turkey vulture and are distributed throughout the entire area, being most commonly found near ranching and agricultural areas.

Several species of raptors (birds of prey) are common to the study area. These include the red-tailed hawk, ferruginous hawk, golden eagle, great-horned owl, burrowing owl, and short-eared owl, all of which nest in the study area. Some of these species also winter in the area, along with such migrants as the bald eagle, osprey, and rough-legged hawk. The peregrine falcon (an endangered species) has been sighted in the study area.

Raptor nesting sites are concentrated in the vicinity of riparian or aquatic habitat and those areas of moderate to high rodent and rabbit (prey species) population densities. Wintering concentrations of the larger raptors are found in those areas supporting rabbit populations. Critical raptor and upland game habitat is shown on the Upland Game and Raptor Habitat Map, p. 2-35

#### AQUATIC

The study area provides a variety of aquatic habitat such as wet meadows, ponds, reservoirs, and streams for a variety of species including fishes, invertebrates, waterfowl, amphibious and water-associated mammals.



The Snake and Humboldt River drainages provide important habitat for the aquatic-associated mammals. Migratory waterfowl within the Pacific flyway utilize the Snake and Humboldt drainages during fall and spring migrations. More than half a million waterfowl travel Nevada's migration routes annually while substantially larger numbers move through the Snake drainage. Significant numbers of waterfowl, shorebirds, and marsh birds nest within or adjacent to the aquatic habitat throughout the area. Migration routes and nesting habitat are indicated on the Upland Game and Raptor Map, p. 2-35.

Stream habitat quality varies widely over the area, population and species numbers being dependent on this water quality. Salmon Falls Creek drainage within the Snake system provides excellent trout and salmon habitat on the upper portion of the stream and reservoir. Stream habitat quality of the Lower Salmon Falls Creek and that part of the Snake River within the area is seriously affected by major water flow withdrawals for agricultural purposes.

The Humboldt system has good to excellent trout habitat only in the upper portions. The middle and lower portions of the system are deteriorating rapidly due to natural and man-made causes, and these portions support introduced warm-water game fish species along with carp and other rough-fish species. Fisheries habitat is shown on the Big Game and Fisheries Map, p. 2-33. Fish species inhabiting the various streams and the habitat quality of the streams within the major systems are listed in Appendix F, p. 10-37.

#### THREATENED OR ENDANGERED SPECIES

The American peregrine falcon, Falco peregrinus anatum, is occasionally sighted within the study area during the winter and during spring and fall migration. The peregrine falcon does not nest within the study area.

The northern bald eagle, which only winters in the study area, is currently under consideration for possible inclusion on the Secretary of the Interior's list of endangered species. The southern bald eagle (an endangered species) is recognized as occurring only south of the 40th parallel.

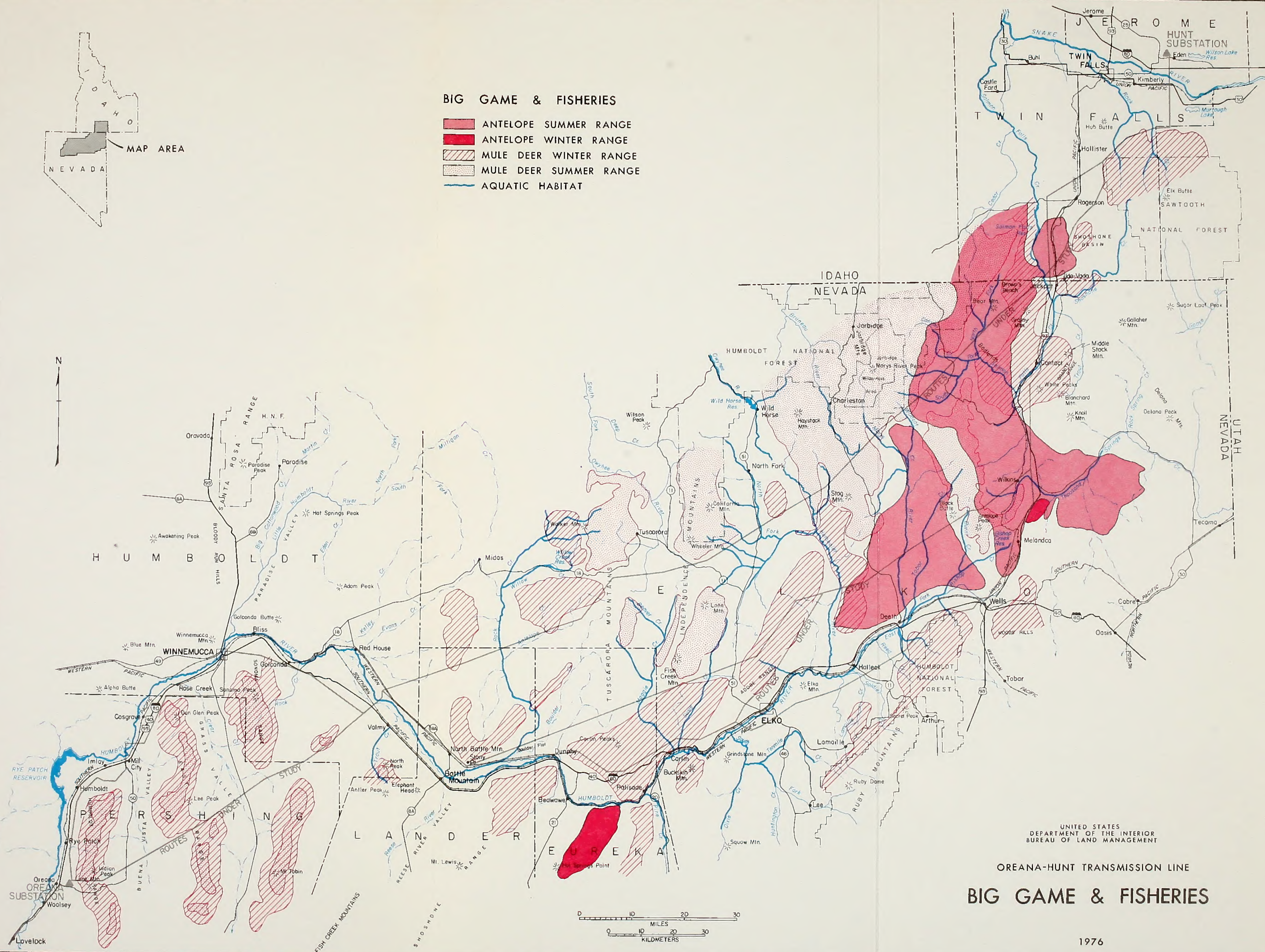
The Lahontan cutthroat trout, Salmo clarki henshawi, is listed as a threatened species and is found within the Humboldt River drainage. This species is particularly found in the Marys River and according to Mr. Bob Behnke, fish taxonomist from Colorado State University, Colorado, these fish are pure specimens of the Humboldt variety of the Lahontan cutthroat trout, Salmo clarki humboldtensis, (see Appendix F. - Wildlife). Appendix F contains a comprehensive report contracted by and provided by Sierra Pacific Power Company, "An Evaluation of the Effects of the Con-





# BIG GAME & FISHERIES

- ANTELOPE SUMMER RANGE
- ANTELOPE WINTER RANGE
- MULE DEER WINTER RANGE
- MULE DEER SUMMER RANGE
- AQUATIC HABITAT



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## BIG GAME & FISHERIES



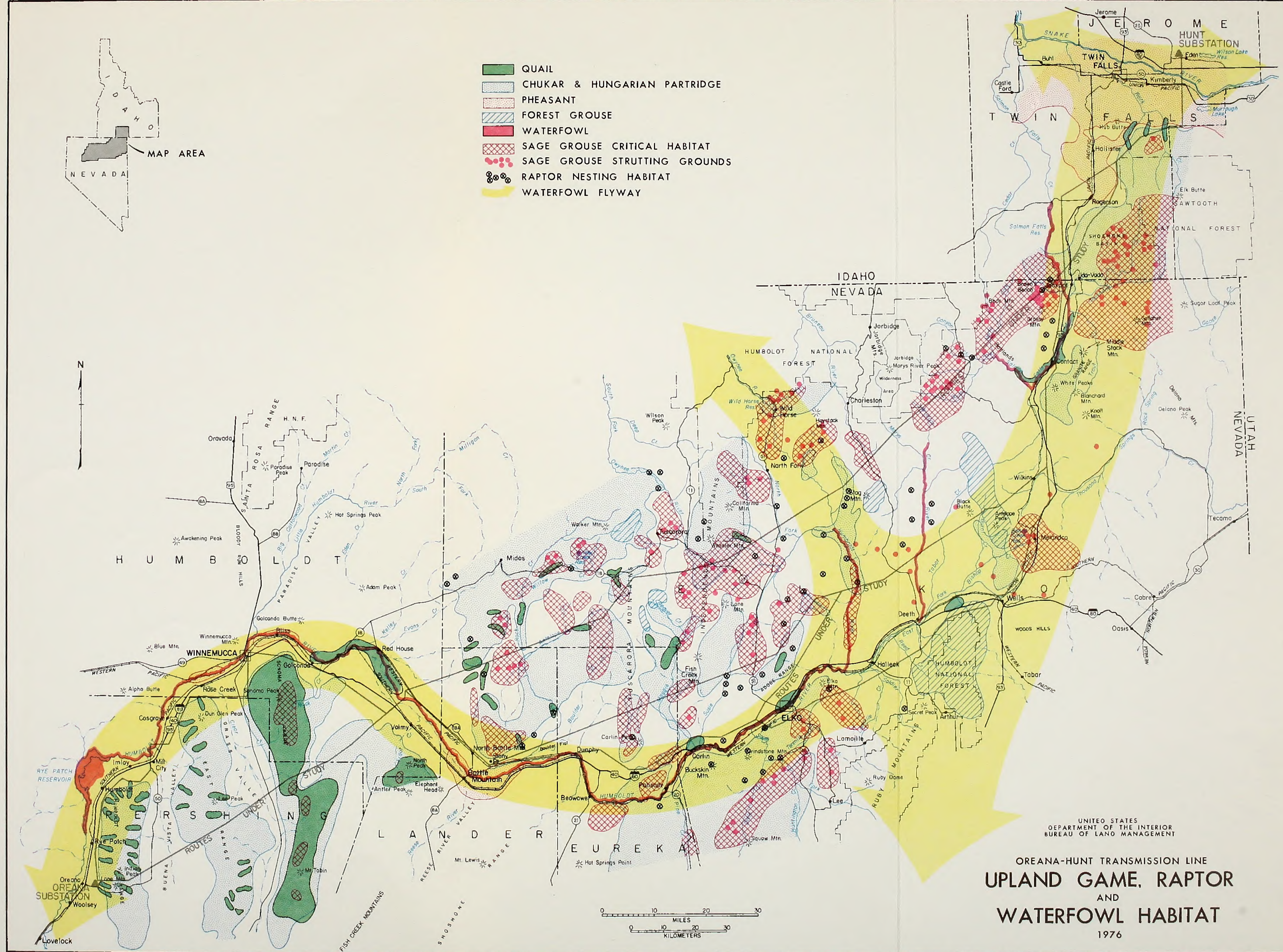






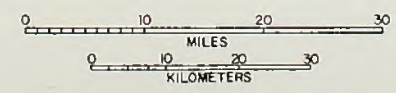


- QUAIL
- CHUKAR & HUNGARIAN PARTRIDGE
- PHEASANT
- FOREST GROUSE
- WATERFOWL
- SAGE GROUSE CRITICAL HABITAT
- SAGE GROUSE STRUTTING GROUNDS
- RAPTOR NESTING HABITAT
- WATERFOWL FLYWAY



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OREANA-HUNT TRANSMISSION LINE  
**UPLAND GAME, RAPTOR  
AND  
WATERFOWL HABITAT**  
1976









struction and Operation of the Sierra Pacific Power Company's Transmission Line from Oreana, Nevada to Hunt, Idaho Upon the Lahontan Cutthroat Trout Population of Marys River in Elko County, Nevada," by Thomas J. Trelease, Fisheries Consultant.

The State of Nevada Board of Fish and Game Commissioners has classified the peregrine falcon as an endangered species within the State of Nevada, while the spotted bat, Enderma maculatum, is classified as a rare species.

## HUMAN ASPECTS OF THE ENVIRONMENT

### LAND USES AND OWNERSHIP

#### LAND CHARACTERISTICS

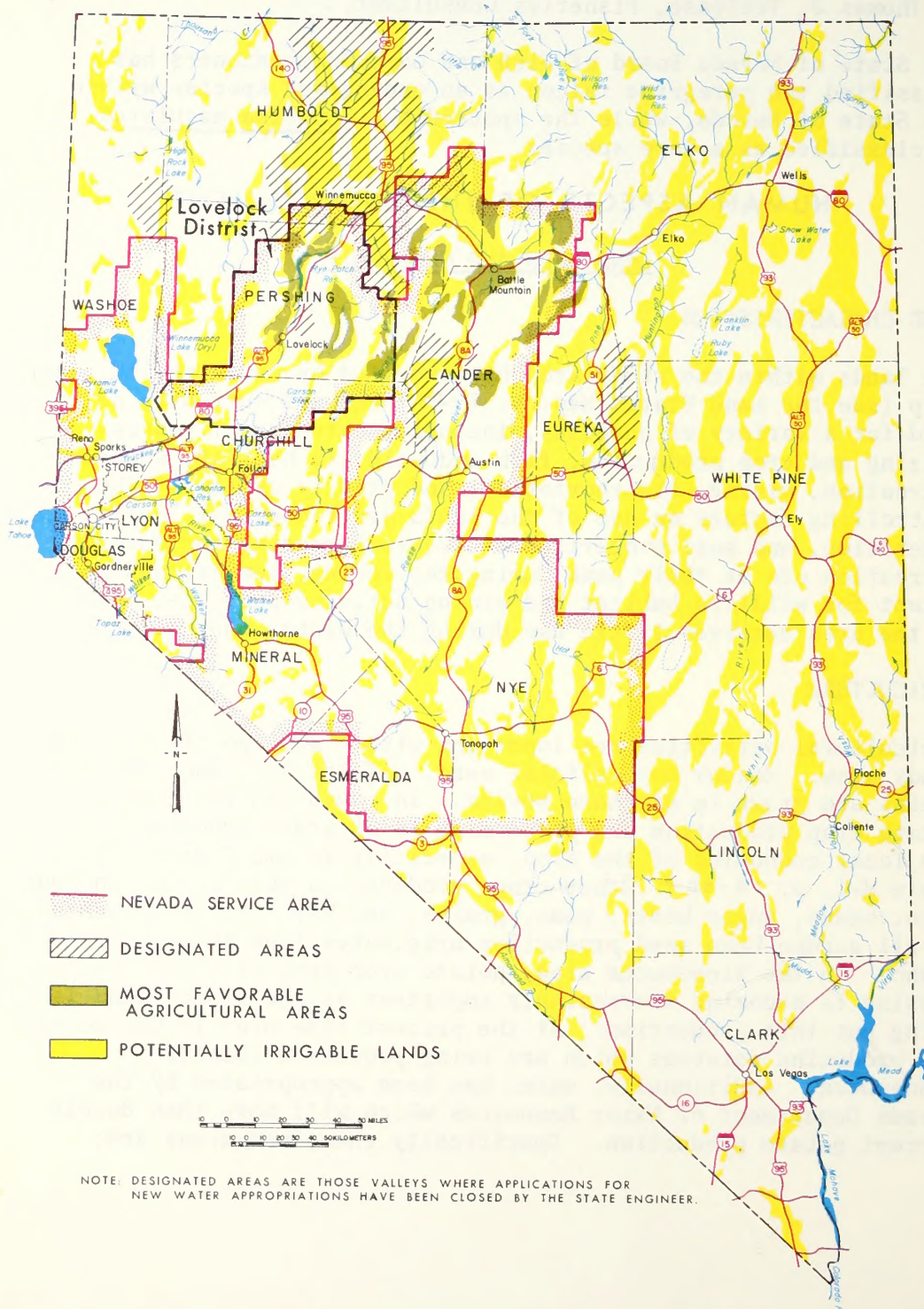
The lands within the study are characterized by checkerboard ownership (see the Land Status Map, p. 2-39) and are currently being used for a variety of purposes, including extensive livestock grazing and crop production, fish and wildlife habitat, outdoor recreation, mining, transportation, and utility systems. The controlling factors on use of the lands are topography, climate, vegetation, and soil properties. Livestock grazing and outdoor recreation are at their peak during the spring, summer, and fall. Except for wildlife habitat and mining activity purposes, most of the area receives little use during the winter months.

#### AGRICULTURE

Agricultural activities are important within some portions of the study area. Meadow hay, alfalfa seed, alfalfa hay, and some feed grains are grown in northern Nevada. In south-central Idaho, potato crop production and processing is of great importance to the local economies of the area, especially Jerome County. (See Table H-1, p. 10-60.) Other crops produced in this region include corn, beans, sugar beets, peas, grains, and hay. About 85 percent of all garden bean seed production originates from this portion of Idaho. In the Winnemucca area, potato crop production and processing is becoming increasingly important as additional land is being put into production. At the present time over 10,000 acres are producing potatoes which are being processed locally in Winnemucca. Additionally, water has been appropriated by the Nevada Department of Water Resources which will more than double current potato production. Specifically these new areas are:



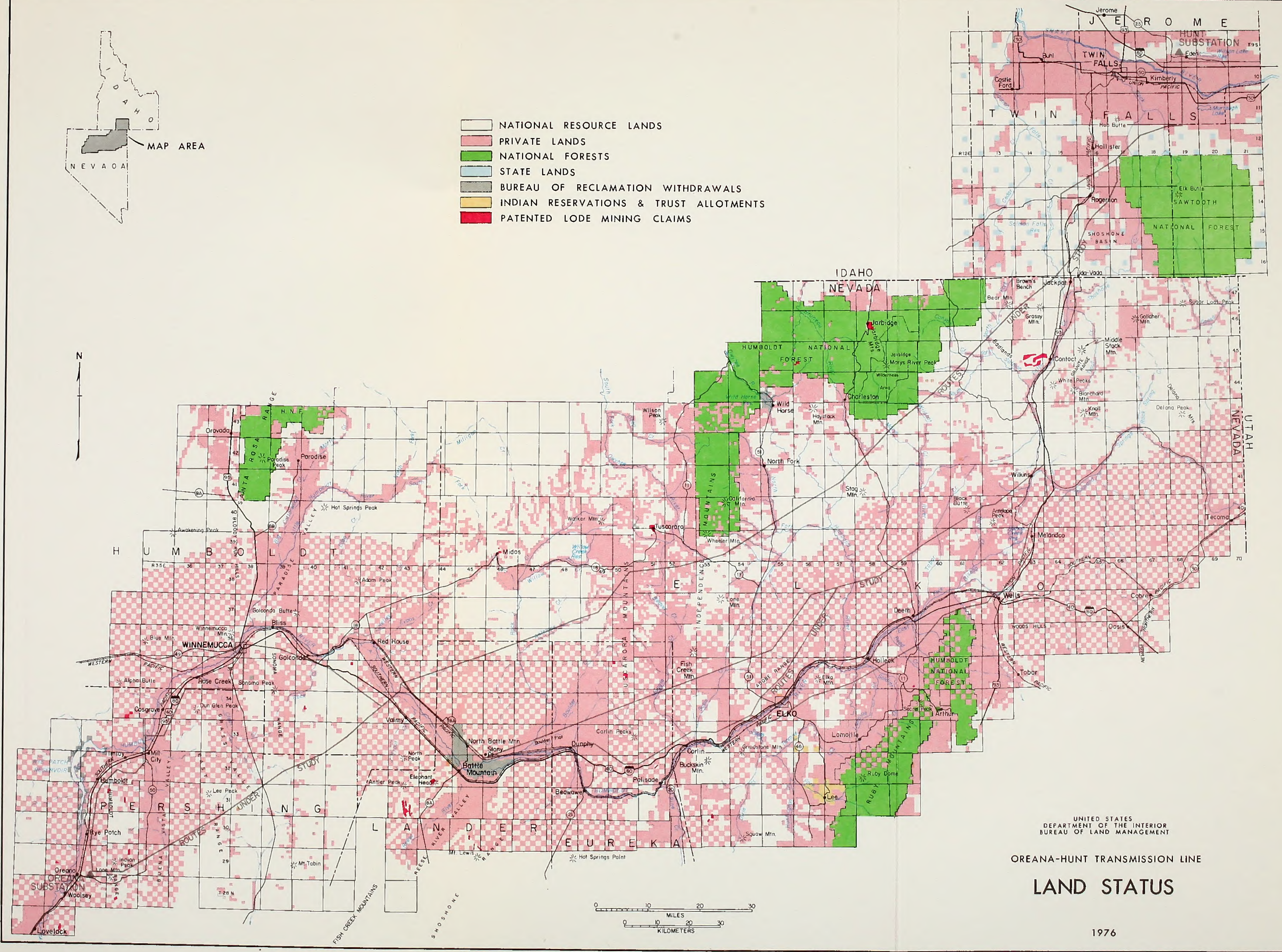
# LOVELOCK DISTRICT IRRIGATED AGRICULTURAL POTENTIAL







- NATIONAL RESOURCE LANDS
- PRIVATE LANDS
- NATIONAL FORESTS
- STATE LANDS
- BUREAU OF RECLAMATION WITHDRAWALS
- INDIAN RESERVATIONS & TRUST ALLOTMENTS
- PATENTED LOBE MINING CLAIMS



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

OREANA-HUNT TRANSMISSION LINE

LAND STATUS







TABLE 2-3

LOVELOCK DISTRICT IRRIGATED AGRICULTURE POTENTIAL<sup>1/</sup>

Hydrographic Area	2/ County	3/ Irrigable Acres	4/ Perennial yield in AF/Y (Water)	Land for irrigation based on perennial yield (Acres)	5/ Land irrigated in 1969 (Acres)	6/ Additional land for irrigation (Acres)	7/ Electrical power required (Kilowatts)	8/ Estimated private land in area (Percent)
61	Eureka	44,000	30,000	15,000	5,745	9,255	9,070	86
54	Eureka/Lander	55,000	16,000	8,000	1,800	6,200	6,076	18
55	Lander	24,000	4,000	2,000	1,200	800	784	08
64	Humboldt/Lander	45,000	36,000	18,000	11,680	6,320	6,193	26
59	Lander	55,000	10,000	5,000	800	4,200	4,116	37
131	Pershing/Lander	40,000	8,000	4,000	640	3,360	3,293	03
65	Pershing/Humboldt	15,500	36,000	18,000	420	17,580	17,228	70
130	Pershing	9,000	3,000	1,500	100	1,400	1,372	06
132	Pershing	2,900	500	250	30	220	216	02
128	Pershing	38,000	15,000	7,500	0	7,500	7,350	01
129	Pershing	56,000	10,000	5,000	1,200	3,800	3,724	23
72	Pershing	65,000	3,000	1,500	400	1,100	1,078	32
73	Pershing	12,000	43,000	21,500	31,000	--	--	--
TOTAL		461,400	214,500	107,250	55,015	61,735	60,500	--

1/ Lovelock District is the northeast portion of Sierra Pacific's service area, comprising parts of Humboldt, Pershing, Lander and Eureka counties.

2/ Nevada has been divided into 14 hydrographic regions and basins by the Nevada Division of Water Resources and the U.S. Geological Survey to compile water resource and use information. These regions are also subdivided into 232 hydrographic areas (valleys) for more detailed study. The hydrographic areas delineated above are pertinent to our study area.

3/ Irrigable acres as defined in this study area are those soils that have slight to severe limitations that reduce the choice of crops, and are located in 100-200 day freeze-free zones.

4/ Perennial yield is the amount of groundwater which can be removed from a hydrographic area each year without depleting the groundwater reservoir. Above figures represent "Undesignated" valleys.

5/ Land available for irrigation is based on an estimated per acre crop water consumption by county and crop. For example; in our study area an estimated 2 acre feet is the crop consumptive water requirement. Therefore, column 4 ÷ 2 = land available for irrigation.

6/ See Appendix 8 "Irrigable land by hydrographic area for Nevada", forecast for the future - agriculture, Report No. 8, Division of Water Resources, Carson City, Nevada.

7/ Column 5 - Column 6 = that land that is additionally available for irrigation based on crop water requirements and undesignated valley perennial yield.

8/ Electrical power demands determined from existing power requirements found on an extensive farming operation in the Winnemucca area. This operation requires 17,000 horsepower, which converts to .98 kilowatts per acre. Thus column 7x.98 = column 8.

9/ This column indicates the ratio of private land to public land in column 3.



<u>Area</u>	<u>Acres</u>	<u>County</u>
Upper Silver State Valley	2,240	Humboldt
Eden Valley	1,544	Humboldt
Imlay Area	3,840	Pershing
North Battle Mountain Area	3,520	Lander
Total	11,144	



*First-year potato field southwest of Winnemucca, Nevada, in Silver State Valley. [Note sprinkler irrigation system.]*

Irrigated agriculture potential within the north-eastern portions of Sierra-Pacific's service area has been illustrated on the Agricultural Potential Map, p. 2-38. These delineations were constrained by (1) water availability (undesignated valley), (2) soil types, (3) temperature zones, and (4) perennial yield. Tabulated data as presented in Table 2-3, p. 2-41, indicates that this potential is considerable. Based on the above constraints, an estimated additional 61,000 acres are available for irrigation if 100 percent of the perennial yield is utilized. When a 50 percent utilization of perennial yield is calculated, a conservative esti-



mate of 30,000 acres of new agricultural land is potentially available.

### LIVESTOCK GRAZING

Livestock grazing is important to the total economy within the study area. Forage conditions range from very poor to moderate. All national resource lands under BLM administration are covered by grazing allotments. More than 25 percent of the livestock industry of northern Nevada is dependent upon BLM-administered lands (total forage consumed). The livestock industry based within the study area in Idaho is less dependent upon BLM lands due to the higher percentage of privately owned lands used for grazing and agriculture.

### MINERAL ACTIVITIES

Mining activity is fairly important to the local economies within the study area. Roughly 10 percent of the total personal income in the northern Nevada area is derived from mining operations. The only mining activity in the southern Idaho portion of the study area is the extraction of sand and gravel. Although mining produces a small part of the communities' total personal income, it should be noted that mineral products are basic resources required in almost all other sectors of economic activity.

### TRANSPORTATION

Major transportation routes in the Nevada portion of the study area include Interstate 80, U.S. Highways 93 and 95, and State Highways 50, 51 and 11. Routes in Idaho include Interstate 80 North, U.S. Highways 93 and 30, and State Highways 50, 74, and 25. Interior roads of varying quality provide access within the study area. (The Study Area Map, p. 1-5, shows the basic transportation net.)

The Southern Pacific, Western Pacific, and Union Pacific railroads are located within the study area. The Southern Pacific and Western Pacific railroads roughly parallel each other and follow the Humboldt River and Interstate 80 between Winnemucca and Wells. An abandoned Union Pacific Railroad track follows U.S. Highway 93 from Wells north into the Twin Falls area. A Union Pacific line crosses the Snake River Valley, north of the Snake River, with a spur line south of the Snake River through Twin Falls.

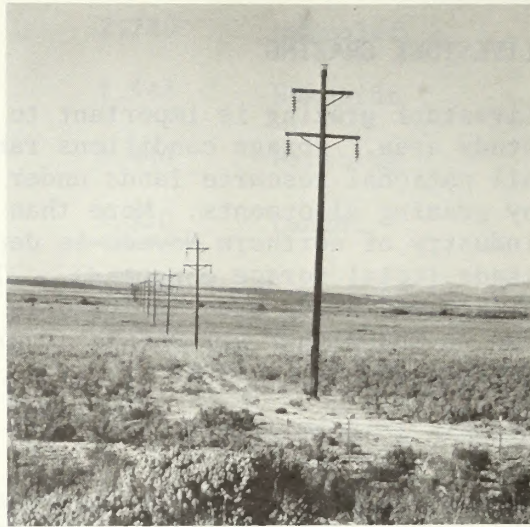
### UTILITIES

Sierra Pacific Power Company's Tracy generating plant, located in the Truckee Canyon, provides electrical service via numerous distribution lines extending west and east from the plant to Reno, Carson City, Lake Tahoe, Lovelock, Fernley, Winnemucca, and Battle





*Existing 138 kv transmission line on the Highway Corridor as it traverses native range 25 miles north of Wells, Nevada.*



*Existing 138 kv transmission line on the Highway Corridor traversing a crested wheat seeding 15 miles east of Elko, Nevada.*

Mountain. The Reno-Carson City-Lake Tahoe area and the Lovelock District are the major load centers within Sierra-Pacific's service area, the former representing 78 percent of the total load requirement.

The main supplier of power to the northeastern Nevada area is Idaho Power Company which provides power to the Nevada Power Company servicing Elko. Under a recent agreement, Wells Rural Electric (a Rural Electrification Administration cooperative servicing the city of Wells, Nevada, and rural customers) is receiving all of its power from the Bonneville Power Administration. This power comes to Wells Rural Electric via Idaho Power Company.

Southwest Gas Corporation owns a natural gas pipeline that crosses northern Nevada in a northeasterly to southwesterly direction, passing close to Oreana.

The American Telephone & Telegraph Corporation has a buried coaxial cable crossing the northern section of Nevada (from east to west) Each of the corridors crosses this line at least once between Valmy and Jackpot, Nevada.



## RECREATION

In this portion of northern Nevada and southern Idaho a wide range of recreation opportunities exist. This is, for the most part, directly related to the variety in topography, moisture, vegetation, and wildlife in the study area. Most of the recreation activities are associated with water and/or mountainous terrain.

A regional breakdown of the recreation values shown on the Recreation Activities Map, p. 2-55, represents all medium to high outdoor recreation opportunities that are recognized by the BLM's Recreation Information System (RIS). The RIS is an evaluation and rating process, outlined in BLM Manual 6110, which determines on a relative scale the inherent recreation-use value of the natural and cultural resources. Each District Recreation Planner utilizes this process to identify and rate in categories of A, B, or C (A being highest) the recreational experience a person may expect while engaged in a particular outdoor activity. Specific recreation activity information is available at District Offices. (See the District Boundaries Map, p. 2-46, for the Districts involved.)

In this analysis, the recreation map was developed to identify concentrations of recreation activity. This has been accomplished by consolidating recreation opportunities into the following general headings:

- 1) Water Related activities
- 2) Non-water Related activities
- 3) Winter Sports
- 4) Sightseeing
- 5) Primitive values

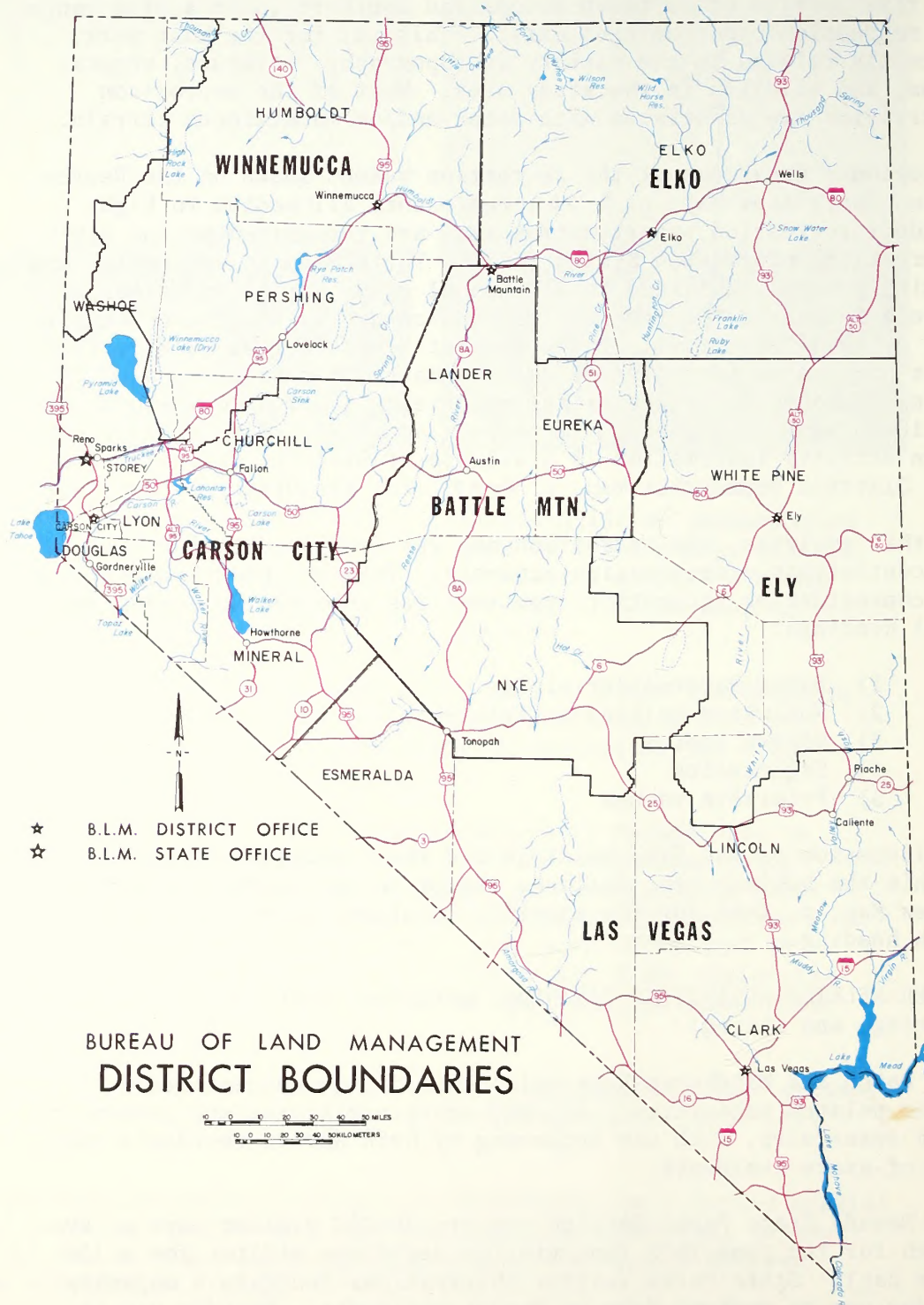
A discussion of the five headings and their related activities within the subject area follows. Refer to the Recreation Activities Map, p. 2-55 for the specific locations discussed under each heading.

WATER RELATED ACTIVITIES (fishing, waterfowl hunting, swimming, boating, and skiing).

Rye Patch and Wildhorse Reservoirs show a high concentration of water related activities. All the above activities are common in both reservoirs, with use occurring by both Nevada residents and out-of-state residents.

The Nevada State Parks Service reports 90,302 visitor days at Rye Patch for the year 1975 (one visitor day = one visitor for a 12-hour day). State Parks visitor observations indicate a majority of day use on weekend days by Nevada residents. Weekday use is mostly from out-of-staters who are traveling along Interstate 80 and who wish to camp overnight.







Vacation-time use (a destination-oriented recreation activity) is more common at Wildhorse Reservoir. The best record of use at Wildhorse is by the Nevada Department of Fish and Game. They report 102,000 angler days (one angler day = one person fishing any part of the day). The California State Parks report deficiencies in outdoor recreation areas in their state (California State Comprehensive Outdoor Recreation Plan). This supports the observation that the majority of out-of-state use at Wildhorse Reservoir comes from California.

Camping and picnic facilities are provided by the Nevada State Park Service at Rye Patch. A combined effort of private and BLM campgrounds is found at Wildhorse Reservoir.

Salmon Falls Reservoir in Idaho also has a variety of recreation activities available. A popular activity is ice fishing, as fishing year-round is allowed. Major use of the reservoir is by residents of southern Idaho (Twin Falls locality), with weekend use common. Camping and picnicking facilities are provided by BLM.

A high concentration of recreation activities have been identified on the North Fork of the Humboldt River. A combination of activities such as float-boating, swimming, and fishing take place there. Recreation use in this area is generally by residents of Elko County. Moderate concentrations of water recreation activity occur on the Humboldt River itself. A combination of activities such as waterfowl hunting and float-boating have been identified where the river passes through the Elko and Carlin areas.

Fishing and waterfowl hunting opportunities exist just north and south of Rye Patch Reservoir. This combination of activities is present in many of the tributaries on the west side of the Ruby Mountains.

Although moderate concentrations of water-related recreation activity are identified on the Snake River, the fishing and hunting activities are more common. Boating and fishing are popular on Murtaugh Lake.

Stream fishing is one of the more popular activities within the subject area. Medium to high quality fishing opportunities have been identified in the upstream tributaries of the Marys River and Salmon Falls Creek, south and east of Jarbidge Mountain.

There are four proposed multipurpose reservoirs in the area:

- 1) Rock Creek, located north of Battle Mountain;
- 2) Hylton, on the south fork of the Humboldt;
- 3) Devils Gate, on the north fork of the Humboldt; and
- 4) Vista, on the Marys River



The U.S. Army Corps of Engineers has completed a preliminary draft concerning the Environmental Inventory and Base Assessment of the Hylton, Devils Gate, and Vista Reservoirs. They are presently conducting advanced engineering and design studies of those reservoirs.

A preliminary engineering report has been completed by Chilton Engineers, Elko, Nevada, concerning the Rock Creek Reservoir. This project is sponsored by the Battle Mountain Fair and Recreation Board. Matching funds from the State of Nevada are being requested by the Board for the preparation of an environmental and social-economic study. A target date for construction of Rock Creek Reservoir is the fall of 1977.

TABLE 2-4a  
TOTAL VISITOR-DAY PROJECTIONS FOR THE UPPER HUMBOLDT RESERVOIR  
PROJECT BY AREAS OF ORIGIN (BASE PROTECTION)

Origin	Percent of Total in 1985	1985
Elko County Residents	25.5	42,099
Nevada Residents 1/	48.3	79,731
Out-of-State Residents	26.2	43,249

1/ Excluding Elko County residents.

TABLE 2-4b  
TOTAL VISITOR-DAY PROJECTIONS FOR THE UPPER HUMBOLDT  
RESERVOIR PROJECT, 1985

Reservoir	Annual Rate of Increase in Per Capita Visitation		
	Zero Percent	One Percent	Five Percent
Hylton	109,880	127,600	228,400
Devil's Gate	41,300	47,900	85,900
Vista	13,899	16,100	28,900
Total	165,079	191,600	343,200

The above tables illustrate visitor-day projections for the Upper Humboldt Reservoir project (Hylton, Devil's Gate, and Vista Reservoirs). Information taken from Recreation Use of the Proposed Upper Humboldt Reservoirs, an unpublished report from the Division of Agricultural and Resource Economics Cooperative Extension Service, College of Agriculture, University of Nevada, Reno, written by Don Beeler, 1972.

#### NON-WATER RELATED ACTIVITIES (hunting, collecting, ORV Activities)

Numerous hunting camps throughout the mountainous terrain indicate the high popularity of hunting in this portion of Nevada and Idaho.



Hunting is by far the most popular non-water related activity.

The entire region receives heavy hunting pressure from the Reno area. Each year thousands of out-of-state licenses have been purchased for hunting in the Elko area. Big game hunters seem to congregate in northern Elko County particularly Jarbidge Mountain, Stag Mountain, and Brown's Bench.

Upland game hunting is also popular. Upland game hunting seasons are longer than big game seasons, and allow the hunter more freedom to select outgoing dates. Therefore, heavy upland game hunter concentration in a particular area is not as common as it is with big game hunting.

Collecting areas are more specifically identified than hunting or specialized activities. Therefore, the concentrations of non-water related recreation, as identified on the recreation map, are definite indicators of high-quality collecting sites, rather than hunting or specialized activity sites.

Rock and mineral shops are found in most of the communities in the study area. Heavy weekend and summer vacation collecting pressure has been recorded from rock and mineral clubs out of Reno, Susanville, and Twin Falls. Two areas, one surrounding the town of Tuscarora and one around Willow Creek Reservoir, show concentrations of both collecting and hunting. Areas identified with high concentrations of collecting activities are Lone Mountain west of Highway 51, and Double Mountain west of the North Fork of the Humboldt River. A large collecting area is also identified due north of Elko.

Off-road vehicles (ORV's) are popular throughout the entire area, with four-wheel drive clubs found in most communities. ORV events are planned in areas that are a short driving distance from population centers. There are areas where it has been recommended ORV use should be closed or restricted. For the most part these areas are identified under primitive activities, p. 2-52 .

#### WINTER SPORTS (skiing, snowmobiling)

Few winter sports locations in the study area have been identified. This is not necessarily due to the lack of winter snow, but rather to the lack of participants. The people outside the small local communities of Nevada who frequent the subject area for summertime activities are not drawn to the subject area for winter sports activities.

The only established ski area within the study area is in the Sawtooth National Forest. It is supported by the Twin Falls and Burley, Idaho, localities. The smaller local communities of Nevada are too small to make commercial winter sports areas profitable



even though the interest is there. Residents of the smaller Nevada communities do have locally popular winter sports areas. A significant number own snowmobiles, and weekend snowmobile outings are common. (See Table 2-5, below.) Elko residents prefer the Adobe Summit locality on Highway 51. Hinkey Summit, north of Paradise Valley, and Water Canyon, south of Winnemucca, are popular areas for the residents of Winnemucca. The activities in these areas include skiing, sledding, and snowmobiling.

TABLE 2-5  
RECREATION EQUIPMENT AND VEHICLES OWNED BY HOUSEHOLDS  
IN N.E. NEVADA

<u>Equipment</u>	<u>Percent Owning</u>
Tent Trailer	7
Travel Trailer	11
Camper	22
Camping Equipment	59
Hunting Equipment	68
Fishing Equipment	78
Motorboat	16
Boat Trailer	11
Non-Motorboat	6
Snowmobile	8
Snowshoes	6
Golfing Equipment	13
Outdoor Games Equipment	45
Horse	27
Other	19
<u>Vehicles</u>	
2-Wheel Drive Pickup	39
4-Wheel Drive Pickup	35
Motorcycle	19
Station Wagon	15
Dune Buggy	2
Van or Bus	4
Bicycle	49

The information in Table 2-5 was provided by the Nevada State Parks from the 1976 State Comprehensive Outdoor Recreation Plan (SCORP 76). The final plan is not completed; however, some preliminary results of a random sample phone questionnaire have been compiled. These results are judged to be reasonably accurate with only minor, if any, changes in the final report. Nevada State Parks report their findings by region. Region #5 (communities of Carlin, Elko, and Wells) and #6 (communities of Lovelock, Winnemucca, and Battle Mountain) have been combined to illustrate recreation equipment and vehicles owned by percent of total household units questioned.

SIGHTSEEING (scenic, geological, botanical, zoological, archaeological and historical)



Sightseeing is recognized as one of our nation's most popular activities. All lands have scenic values, some of higher quality than others. All BLM lands and adjacent private land have been rated for their inherent scenic quality, in accordance with the above premise.

Uniqueness, variety, and harmony are the key factors analyzed in rating scenic quality. The major factor that usually detracts from the natural setting is intrusions. Intrusions are usually associated with human activities such as roads, rock quarries, mining scars, powerlines, and fences. Scenery rated moderate to high-class in this part of Nevada and Idaho is typically associated with mountainous terrain characterized by lakes and/or streams. All the moderate to high sightseeing areas are shown on the Recreation Activities Map.

Geological and botanical sightseeing areas are generally associated with the unique or rare land and rock formations and plant types of the region, these areas also having educational and scientific interest. Zoological sightseeing areas are typified by rare sightings of wildlife, sightings of a variety of species, or areas where animal herds or bands roam. Historical and archaeological sightseeing by their nature involve more specific site identification of antiquities that have potential for interpretation to the general public. Locations within the study unit that have concentrations of sightseeing opportunities are listed below:

Humboldt Range: Located east of Oreana, this range is rated as having moderate to high scenic quality even though roads and mining scars detract from it. The mining in this locality is historic, and mining camps, roads, and rails possess significant historical sightseeing value. The Sacramento Canyon area contains handbuilt stonewalls of archaeological significance, both for general sightseeing and for scientific/historical study.

Humboldt River: Located generally along the major travel route of I-80, the river provides a wide range of sightseeing opportunities. The overall scenic quality is high, as the winding nature of the old river provides a moist green belt to the otherwise dry desert valley. In some areas, scenic quality has been interrupted by the introduction of highways, railroads, and overhead transmission lines - this is particularly the case with the stretch of river from Beowawe upstream to its confluence with the North Fork tributary. The geological sightseeing value of this stretch of river remains high.

Owyhee Desert: Identified for zoological values, particularly wild horse observations.



Haystack Mountain: A variety of sightseeing opportunities are identified in this area including scenery, geological, and botanical study.

Salmon Falls Creek (below the reservoir): This unique rock gorge has such high geological sightseeing values that plans are being made for special designation of the area.

#### PRIMITIVE ACTIVITIES

Those areas identified as having primitive recreational activities are generally rated high in scenic quality; they have a variety of wildlife, and a sense of remoteness with a few noticeable man-made intrusions. One area identified on the recreation map has been officially designated as a wilderness area. This is the Jarbidge Wilderness area in the Humboldt National Forest. The remaining lands are special consideration areas which need to be protected for their primitive character. Those identified through the BLM planning process may be withdrawn and officially designated as nationally recognized primitive areas.

Following are locations within the study area that have been identified for their primitive values:

- Star Peak of the Humboldt Range east of Oreana
- Tobin Range approximately 30 miles due south of Winnemucca
- Rough Hills of Haystack Mountain due south of Jarbidge Mountain
- Stag Mountain west of the Marys River
- Head waters of the Marys River
- Snake Range east of the Marys River
- Canyon Creek at the head waters of Salmon Falls Creek
- Badlands of the Salmon west of Highway 93
- Salmon Falls River north of Salmon Falls Reservoir

The Recreation Activities Map also identifies present and potential roadside rest stops, privately owned recreation areas, and areas identified by the States of Nevada and Idaho for potential acquisition as state recreation areas when acquisition monies become available.

#### ROADLESS AREAS AND AREAS OF ENVIRONMENTAL CONCERN

The Federal Land Policy and Management Act of 1976 directs, in Section 201(a), that all public lands and their resources and other values be inventoried, giving priority to areas of critical environmental concern. Tentatively identified areas of environmental concern include the Salmon Falls Creek Canyon area in Idaho from the Idaho-Nevada state line north to Salmon Falls Reservoir; an area extending to the southwest from the Idaho-Nevada state



line to Lookout Mountain, southeast of Charleston, which includes parts of the Bruneau River, Marys River and Salmon Falls Creek drainages; the Adobe Range northeast of Elko; the Lone Mountain area west of State Highway 51 and south of State Highway 11; and a part of the Tuscarora Mountain Range northwest of Carlin. These areas are graphically shown on the Recreation Activities Map, p. 2-55.

Section 603(a) of the above act requires review of identified roadless areas of public lands of 5,000 acres or more having wilderness characteristics described in the Wilderness Act of September 3, 1964.

Roadless areas identified within the study area of this proposed project (as displayed on the Recreation Activities Map, p. 2-55) are areas which must be further evaluated to determine their actual potential for possible designation as wilderness study areas.

The 36 roadless areas indicated on the Recreation Activities Map were identified utilizing the following criteria:

1. A contiguous area of national resource lands (public lands) of 5,000 acres or more.
2. A roadless area. (The absence of roads which have been improved or maintained by mechanical means to insure relatively regular and continuous use. A way maintained solely by the passage of vehicles does not constitute a road.)

This initial determination of roadless areas has been made at the BLM District level utilizing lands status maps and the district transportation map which depict existing roads. (The Study Area Map and Land Status Map, pp. 1-5 and 2-39, give a general depiction of the existing road network.)

The general existing environment (landscape character, flora and fauna, etc.) of these identified roadless areas are discussed in the appropriate sections of this chapter.

Additional criteria will be developed to further analyze these identified roadless areas as to:

1. The existence of man's work (intrusions) and how substantially and noticeably these identified roadless areas are affected by intrusions.
2. The determination of opportunities for solitude or primitive and unconfined types of recreation experiences within these areas.



A quality determination of the wilderness potential of these identified areas has not been made at this time.

### ECONOMIC AND SOCIAL CHARACTERISTICS

The area considered in this section covers 14 Nevada counties and two Southern Idaho counties. Refer to the Critical Growth and Demand Areas Map, p. 2-57, and Table 2-6, below, for the organizational structure and type of analysis by county grouping.

The rationale for analyzing the economic and social characteristics of this broad area, rather than limiting the study area to the actual route, is that upon completion of the proposed electrical transmission line (including a separate short line from Tracy to Oreana), Sierra Pacific's connection with Idaho Power's transmission system would be completed. This would bring 150 megawatts of power into Sierra Pacific's service area, particularly to the Reno-Sparks area, the primary "load center" within this service area. Therefore, a larger area than the actual route would be affected economically and socially by the transmission line and is included in this discussion (See the Service Area Map, p. 2-58.)

Table 2-6  
ORGANIZATIONAL STRUCTURE AND TYPE OF ANALYSIS BY COUNTY GROUPING

Study Area Urban <u>1/</u>	Study Area Rural <u>1/</u>	Electrical Path Area <u>2/</u>	Water Resource Subarea 1604 <u>3/</u>	Water Resource Subarea 1605 <u>3/</u>	PSA 46 B <u>4/</u>
Washoe	Humboldt	Elko	Elko	Washoe	Washoe
Carson City	Pershing	Twin Falls	Humboldt	Storey	Carson City
Douglas	Churchill	Jerome	Pershing	Churchill	Douglas
Storey	Lyon		Lander	Mineral	Storey
	Mineral		Eureka	Lyon	Lyon
	Nye			Douglas	Churchill
	Lander			Carson City	Pershing
	Esmeralda				Humboldt
	Eureka				Lander
					Eureka
					Mineral
					Esmeralda
					Nye

1/ Study Area by county grouping delineates Sierra Pacific Power Co. service area, and conforms to the Federal Power Commission's power supply area (PSA 46 B). Population and employment, assessed valuations analyzed.

2/ Electrical Part Area are those counties providing the bridge for the power line right-of-way. Population, employment, income, assessed valuation analyzed. Twin Falls, Jerome are Idaho counties.

3/ Water Resource Subarea 1604, 1605 contains those counties delineated by the U.S. Water Resources Council and closely conforms to those counties in Sierra Pacific's service area. Income and income projections analyzed.

4/ PSA 46 B area identifies electric energy growth patterns in the impact area.

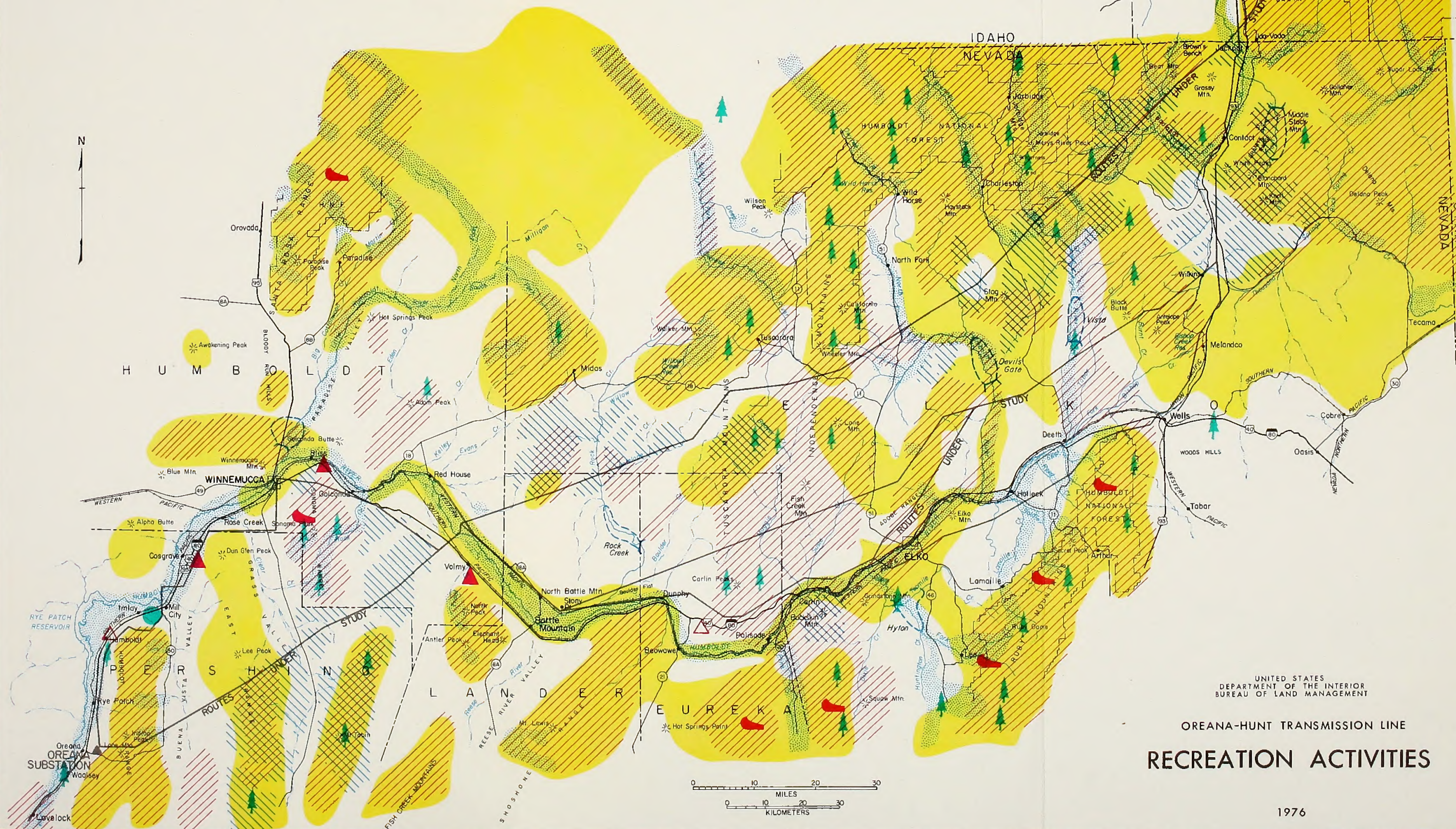




# RECREATION ACTIVITIES

- WATER RELATED ACTIVITIES**  
FISHING, HUNTING, BOATING,  
SWIMMING, SKIING
- NON-WATER RELATED ACTIVITIES**  
UPLAND & BIG GAME HUNTING, ROCK &  
VEGETATION COLLECTING, SPECIALIZED  
ACTIVITIES SUCH AS OFF-ROAD R.V.'S,  
LANDSAILING, HANG GLIDING
- SIGHTSEEING**  
SCENERY, GEOLOGICAL, BOTANICAL,  
ARCHAEOLOGICAL, HISTORICAL,  
ZOOLOGICAL, OTHER CULTURAL
- WINTER SPORTS**  
SKIING, SNOW-PLAY, SNOWMOBILE

- ROADLESS AREAS**
- PROPOSED STATE RECREATION AREAS**
- PROPOSED RESERVOIRS**
- EXISTING ROADSIDE REST AREAS**
- PROPOSED ROADSIDE REST AREAS**
- PRIVATELY OWNED RECREATION AREAS**



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

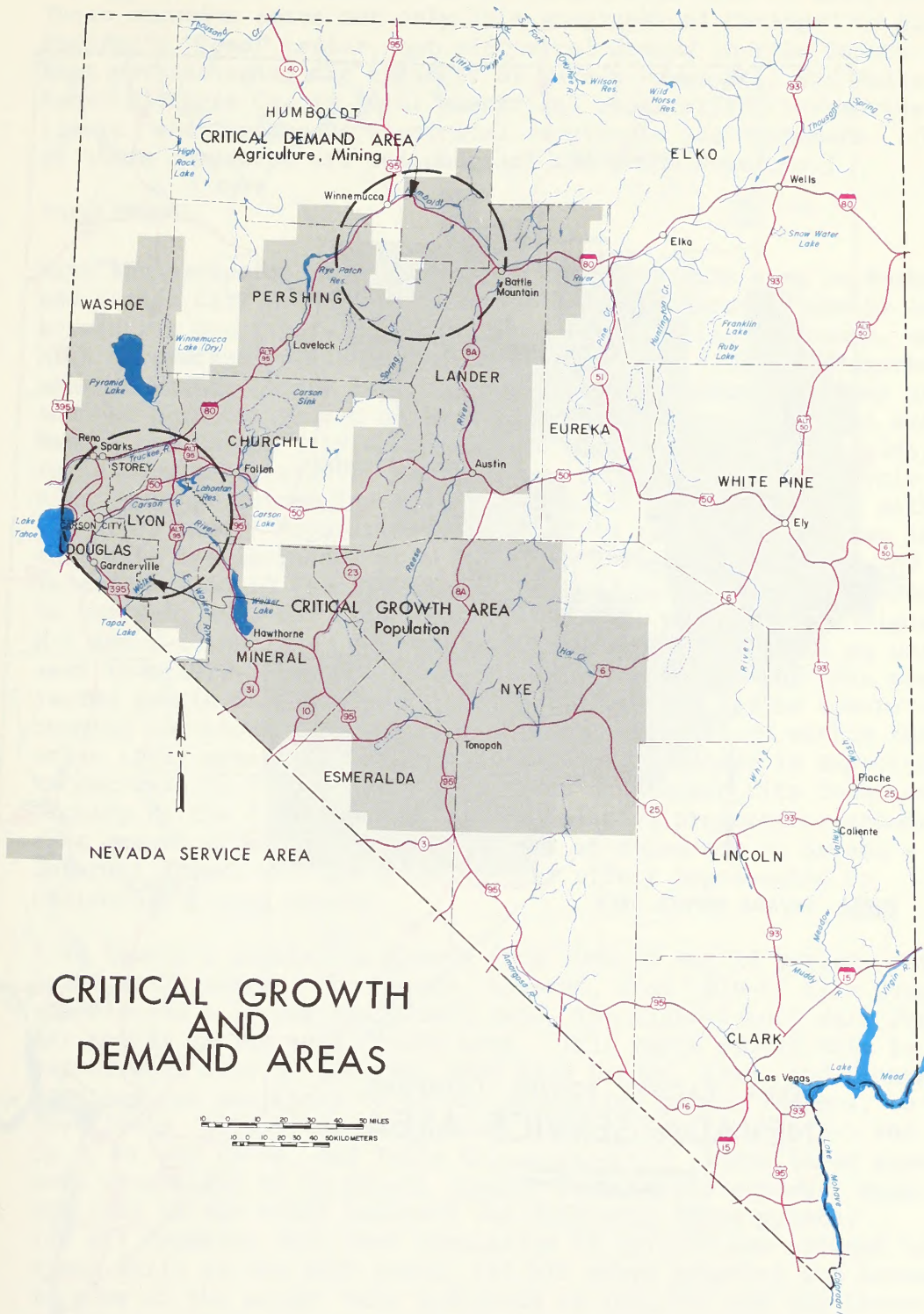
## OREANA-HUNT TRANSMISSION LINE RECREATION ACTIVITIES



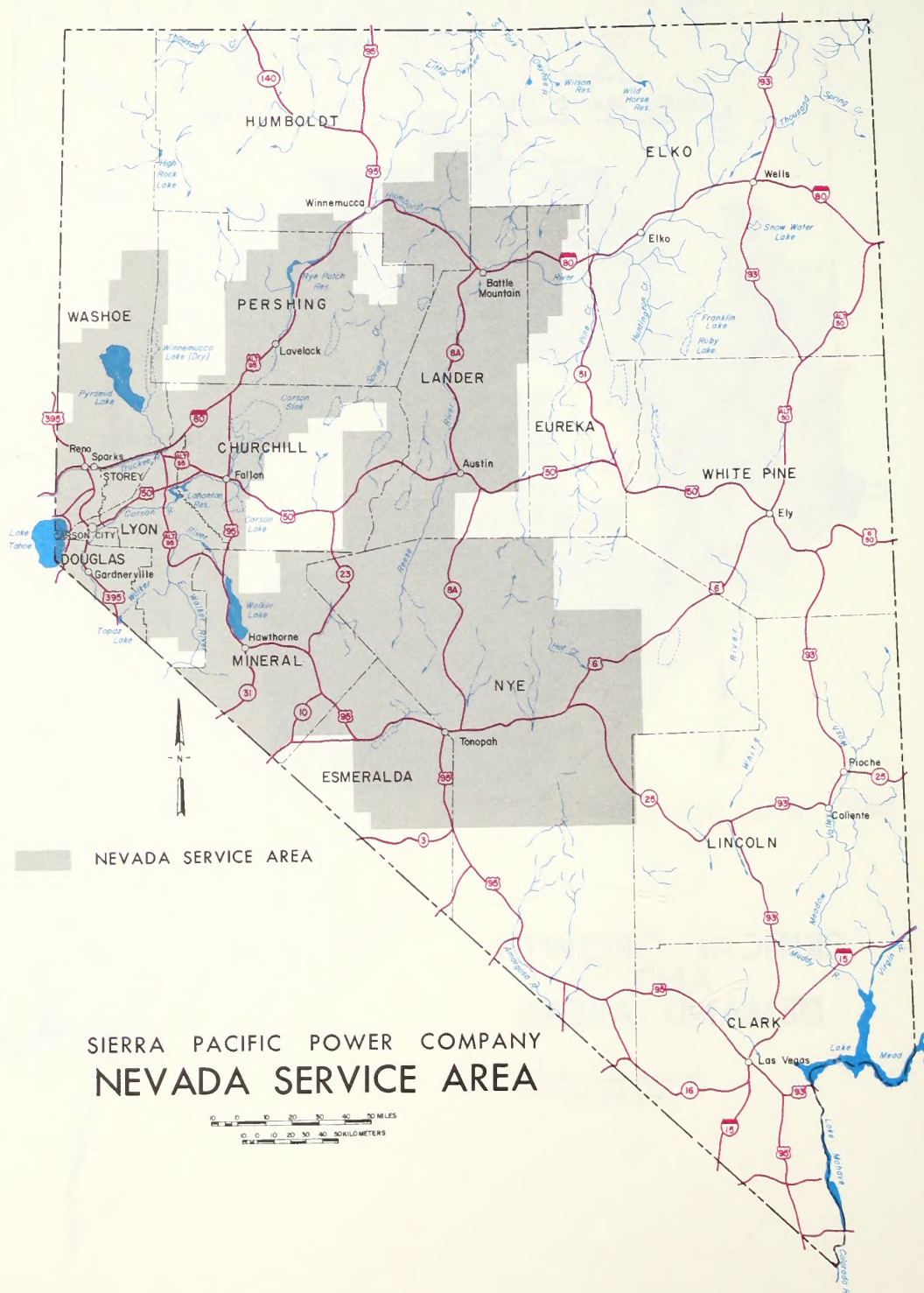














Although the counties comprising Sierra Pacific's service area will be the primary study area, the areas of Elko County, Nevada, and Twin Falls and Jerome County, Idaho, will also be analyzed. These counties serve not only as a geographical "bridge" to Sierra Pacific's "load" center, but electrical demand in Elko County is fast out-stripping the capacity of Nevada Power Co., and Wells Rural Electric Co. (a rural electrical cooperative) to provide reliable and continuous electrical service to its customers. (Both of these companies are customers of the Idaho Power Co.)

## POPULATION

With the exception of the Reno-Sparks-Carson City area in Washoe and Carson City Counties, the study area is characterized by low population density, widely scattered small cities and towns, and high percentages of land in Federal ownership. The Reno-Sparks area of Washoe County is the largest urban area in the study area and has been designated a standard metropolitan statistical area. Washoe and Carson City Counties have high population densities, rapid population growth, diversified economies, and relatively high personal income levels compared to the other counties within the study area. Population growth within the urban counties in this area has increased at a faster rate from 1970-75 than the rate from 1960-70 (see Table H-2, p.10-61). Population projections to the year 2000 for this area, Figure 2-1, p. 2-61, and Figure H-1 and H-2, pp.10-64 and 10-65) indicate similar trends as were seen from 1970-75; however, Washoe County's portion of this projected growth is expected to decrease. In 1975 Washoe County accounted for about 80 percent of the total population within the urban study area. In the year 2000 this percentage is expected to decrease to 74 percent with Douglas and Carson City Counties picking up the difference. These population projections assume that growth within the urban counties is dependent on Nevada's internal growth and the spilling-over effect represented by California's past growth.

Elko County's population growth from 1960-70 was 16 percent compared to 71 percent for Nevada; however, from 1970-75 Elko County experienced a 35 percent growth rate, the highest such rate for any county in the rural study area. This rapid growth rate is expected to slow by the year 2000 when Lander, Lyon, and Churchill Counties are projected to be the population growth leaders, respectively, within the rural study area. (See Figures 2-1 and H-2, pp. 2-61 and 10-65, and Table H-2, p.10-61.) These three counties were determined to be growth leaders because the economic model utilized in the study included the following three points: (1) all counties that lost population in 1971-73 are assumed to stand still at the 1973 level, (2) all other counties are assumed to grow at the actual rate indicated in 1971-73, and (3) Lander County growth derives from the mining industries present, and Churchill and Lyon Counties growth derives from the "spill over"



from urban Washoe County and from the growth of service industries in the area. In the Idaho counties of Twin Falls and Jerome, out-migration characterized the population trends from 1960-70, a situation that was repeated throughout most of the agricultural counties in Southern Idaho. A turn-around in these trends occurred from 1970-74 when Twin Falls and Jerome Counties experienced substantial population growth (10 and 32 percent respectively), and this growth is projected to increase at about the same rate in the foreseeable future. (See Figure 2-1, p. 2-61, and Table H-2, p. 10-61.)

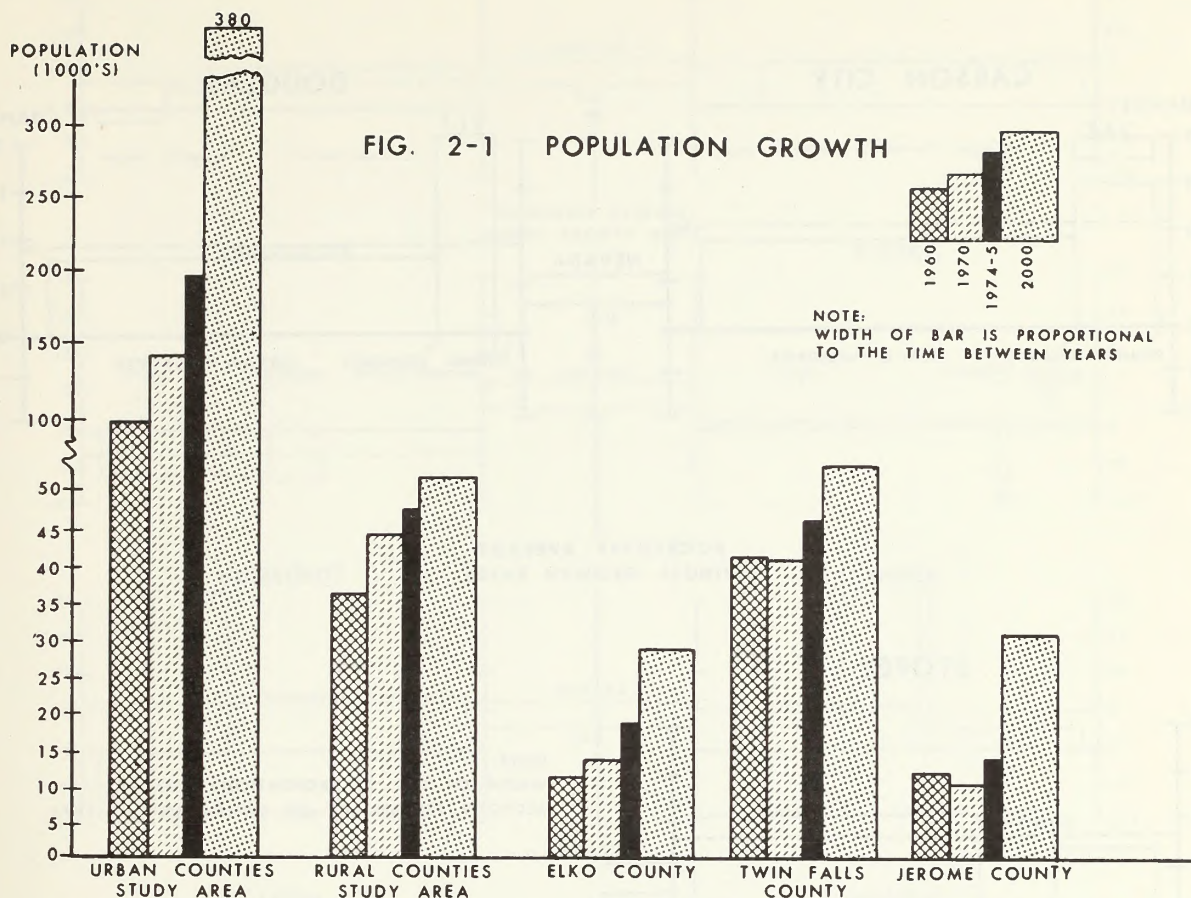
Important to any discussion on population growth is the direction of net migration patterns. Intercensal population estimates since 1970 signify a reversal in the migration patterns between the Pacific Coast States and the Northern Rocky Mountain States. (U.S.D.I.-BLM, Environmental Analysis Record for the Agricultural Development Program, January 1976.) Whether these changes are due to sudden shifts in economic opportunities or inspired by major modifications in values with regard to urban society and the natural environment is not clear. (Western Wire Rural Development Center, "Rural Population Growth More Than Transient Fad," December 1975.) However, in Nevada a study of new residents has indicated "economic opportunities" and high "quality of life" were the primary attractive features for migrating to the State. ("Nevada Immigration Income and Quality of Life," Nevada Business Review, October 1974.)

A demographic analysis of the new development yields two conclusions: First, the magnitude of the change is comprehensive. Where four out of the nine rural counties within the study area in Nevada, and the two Idaho counties experienced net out-migration in the decade 1960-70 (USDI-BLM, Economic Profile for the State of Nevada, June 1974), all of the counties (with the exception of Nye and Esmeralda Counties) have received substantial growth since 1970, especially Humboldt, Pershing, Elko, Twin Falls, and Jerome Counties. Secondly, the greatest current population pressure is occurring in suburban communities in the Reno area. This fact is supported by the growth in surface area in square miles of the city of Reno and immediate surrounding areas:

	<u>Square Miles 1960</u>	<u>Square Miles 1970</u>
Reno	11.7	30.3
Sparks	2.7	5.4
Sun Valley	--	1.9

(The effect of population trends on energy demand are discussed in Chapter 3, Population, p. 3-28.)





SOURCE: 1970 Census of Population, Number of Inhabitants, Nevada, April 1971, U. S. Department of Commerce, Bureau of Census, Population Division; Building Bridges To Work, Nevada Employment Security Department, March 1975, Manpower Information and Research Section.

Population Projections For The Year 2000 developed by S.F. Chu, Bureau of Business and Economic Research, University of Nevada, Reno, March 1975.

Population projections for the year 2000 for Twin Falls and Jerome County, Idaho based on the rate of growth in those counties 1970-4 and projected to 2000.

Employment (urban) - Employment within the urban grouping of counties is rather diversified. The Reno-Sparks area supports a population base which is primarily tourist-service oriented. Although tourism employment is the area's major sector, it is the secondary industries of construction, manufacturing, and transportation that are experiencing a growth rate (1970-74) higher than both the state and national averages. (See Figure 2-2 and 2-3, p.2-62,3, indicating industrial sector growth rates, and Figure H-3, H-4, pp. 10-66 and 10-67, illustrating a sector-by-sector analysis of employment by county.) In general this analysis shows the relationship between population growth and the growth of the construction, manufacturing, and transportation sectors in the urban counties within the study area. Accordingly, for the immediate future, it can be expected that employment in secondary industries will continue to increase, due primarily to projected population growth. (Bureau of Business and Economic Research, An Econometric Model for the State of Nevada, December 1974.)



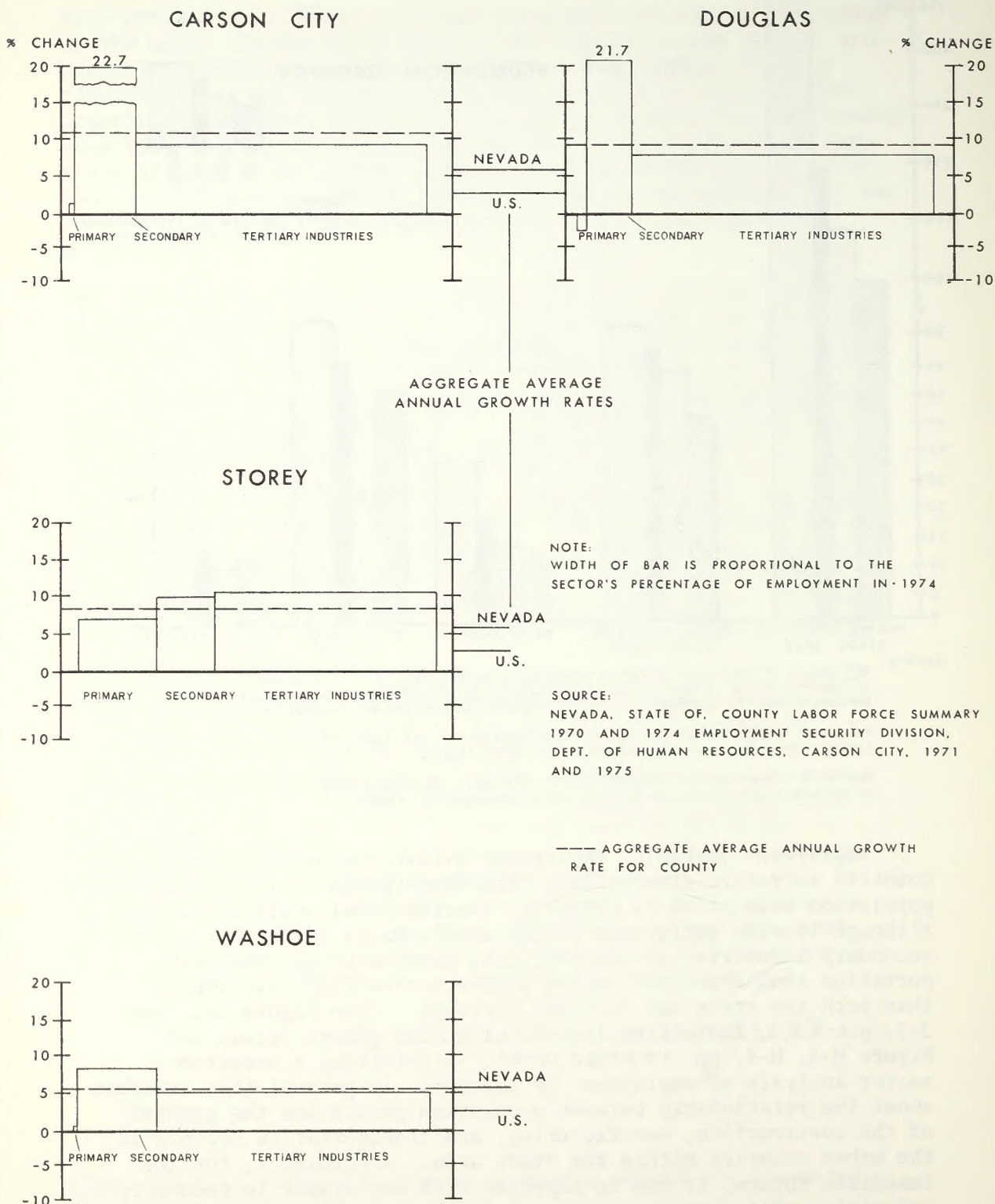


FIG. 2-2 URBAN COUNTIES  
CHANGE OF EMPLOYMENT BY INDUSTRIAL GROUPS







**TABLE 2-7**  
**GROWTH OF PERSONAL INCOME AND AVERAGE ANNUAL PERCENT GROWTH**  
**BY NEVADA AND IDAHO COUNTIES 1969-72**  
**(Millions of Dollars)**

County	1969	1972	Average Annual % Growth	Per Capita Income 1972
	Millions \$	Millions \$	%	\$
<u>Urban</u>				
Washoe	537	744	11.48	5,703
Carson City	60	91	14.89	4,564
Douglas	38	53	11.73	6,246
Storey	3	4	10.06	6,032
<u>Rural</u>				
Humboldt	24	30	7.72	4,718
Pershing	13	17	9.35	6,616
Churchill	31	43	11.52	3,710
Lyon	27	35	9.04	3,694
Mineral	26	31	6.04	4,650
Nye	17	15	-4.09	3,208
Lander	10	13	9.14	5,630
Eureka	6	7	5.27	<b>8,696</b>
Esmeralda	1	-	-	
Elko	60	82	10.97	5,616
<u>Idaho</u>				
Twin Falls	137	185	10.53	4,127
Jerome	32	43	10.35	3,673
<u>U. S.</u>	746.44	935.35	7.81	4,492

Source: U.S. Dept. of Commerce, "Local Area Personal Income", Survey of Current Business, Part II, May 1974.

Employment (rural) - Within the rural grouping of counties in the study area, there is a rather remarkable change away from the exclusively traditional employment picture of agriculture and mining dependency. During the period from 1970-74, the diversification of employment became readily apparent in six out of 10 rural Nevada counties and within Jerome County, Idaho. These counties have all experienced growth rates in the construction and manufacturing industries considerably higher than either state or national averages. (See Table H-1, p.10-60 and Figures H-3, H-4, pp.10-66 and 10-67.)

These developments have lessened the area's general dependence upon extractive industries, which are generally characterized as low-growth industries. The most dramatic examples of this new direction can be seen in the employment picture of Humboldt, Elko, and Jerome Counties. In conjunction with this fairly new direction of employment opportunities within the rural counties is the growing extractive industries in Pershing, Lander, and Nye Coun-



ties. In general, it is the continuing diversification of overall employment that is of significance, not the growth of traditional industries in this area.

Income - Personal income is widely regarded as a barometer of economic welfare and provides a comprehensive measure of the current income received by residents of an area from all sources. Since most personal consumption expenditures are made out of personal income, this aggregate is a good measure of the relative size of the consumer market.

The largest consumer market within the study area is the Reno-Sparks complex in Washoe County. Tertiary industries (industries normally associated with tourism and related services) add strength to the tourist-oriented economy in the county. (Figure 2-2, p. 2-62.) A high median family income, a low percentage of families below the poverty level, and a low percentage of transfer payments received serve to indicate the dynamic aspect of the Reno-Sparks area's economy (Table 2-7, p. 2-64 ).

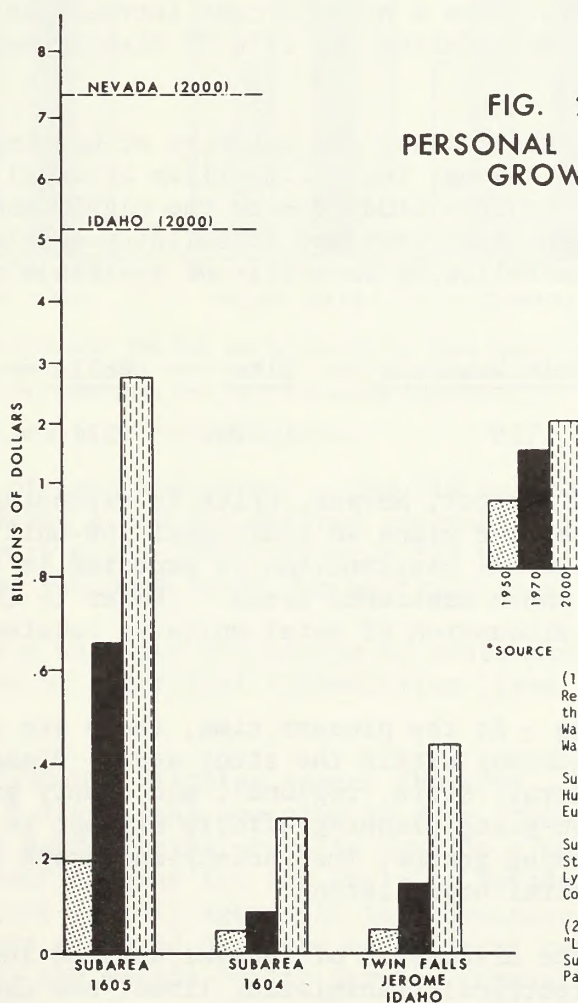


FIG. 2-4  
PERSONAL INCOME  
GROWTH

\*SOURCE

(1) 1972 OBERS Projections  
Regional Economic Activity in  
the U.S. - Volumes 1, 4, 5, U.S.  
Water Resources Council,  
Washington, D.C. April 1974.

Subarea 1604 comprises Elko,  
Humboldt, Pershing, Lander,  
Eureka Counties.

Subarea 1605 comprises Washoe,  
Storey, Churchill, Mineral,  
Lyon, Douglas, Carson City  
Counties.

(2) U.S. Dept. of Commerce,  
"Local Area Personal Income"  
Survey of Current Business,  
Part II, May 1974.



The rural grouping of counties is also experiencing a healthy annual growth rate in personal income, especially in Churchill and Elko Counties in Nevada, and the two Idaho counties of Twin Falls and Jerome. In Jerome County, the appearance of light industry has given the area new potential for this kind of growth. (See Figure 2-4, p. 2-65, reflecting "area" comparisons in growth of personal income projected to the year 2000.)

Public Tax Base - Another indicator of growth in an area is the average annual percentage growth of total assessed valuation. (Local Government Red Book-Fiscal Years 1971-76.) Although the urban counties within our study area contain larger amounts of taxable real property in comparison to the rural counties, it is the annual percentage growth in total assessed valuation that reflects the strength of revenues generated by that increase. Figure 2-5, p. 2-67, shows that generated revenues in Elko County have been increasing at a faster rate than any area grouping currently under study. Although at the present time there are no projections as to future growth of total assessed valuation for the study area as a whole. Elko county plans a nine percent increase in its ad valorem (property tax) rate during the 1976-77 fiscal year. (See Table H-3, p. 10-62.)

Housing - Although the quality and quantity of housing is one indicator of social well-being, the availability of motel units is particularly important in this study due to the highly mobile nature of the construction crews involved in building an electrical transmission line. The following is a list of available motel units by town:

<u>Winnemucca</u>	<u>Battle Mountain</u>	<u>Elko</u>	<u>Wells</u>	<u>Jackpot</u>
700	119	1,200	221	200

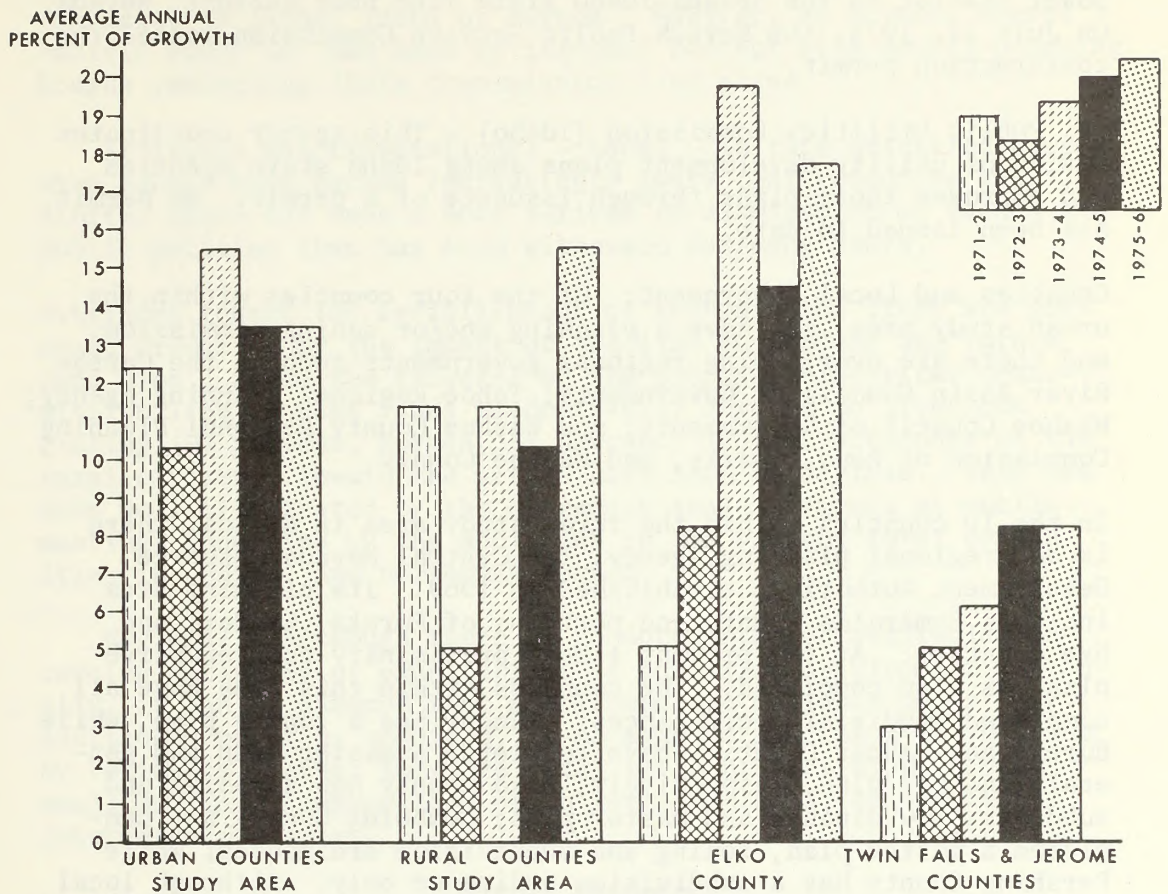
Except for the town of Jackpot, Nevada, which is expanding its tourist-oriented economy and plans an additional 100-unit motel by 1977, no additional motel construction is expected in the foreseeable future in the above mentioned areas. (Refer to Chapter 3, p. 3-31 for additional discussion of motel units as related to construction personnel.)

Planning and Zoning - At the present time, there are varied planning activities underway within the study area. Planning is being conducted by federal, state, regional, and county groups. Although many of the on-going planning efforts attempt to coordinate with other planning groups, the variety and scope of the work precludes any central organization.

Federal: For a complete discussion of federal actions involving the construction of electrical transmission lines, see Chapter 1, p. 1-1



FIG. 2-5 ASSESSED VALUATION-GROWTH INDICATOR



SOURCE:

Local Government Red Book and Ad Valorem Tax Rates Budget Summaries for Nevada Local Governments, Fiscal Years 1971-6. Idaho data obtained through personal contact with Local Tax Commission Twin Falls and Jerome Counties.

1) A value of "0" indicates no growth.

Bureau of Land Management - The BLM has completed a number of multiple-use plans for defined geographic areas. These management framework plans (MFPs) provide the basis for actions to manage national resource lands for multiple uses.

State: For a complete discussion of state actions involving the construction of electrical transmission lines, see Chapter 1, p. 1-4 .

State Land Use Planning Agency (Nevada) - Although Nevada has not passed a state land use plan to date, this agency was created by the 1973 Nevada Legislature to develop a workable land use plan and management program for the State of Nevada. One of the present functions of this agency is to coordinate state review of major actions proposed by state and federal agencies in Nevada. For example, the Nevada Public Service Commission coordinated with the planning agency regarding Sierra Pacific Power Company's



application to construct a 230 kv transmission line from Tracy power station to the Nevada-Idaho state line near Jackpot, Nevada. On July 11, 1975, the Nevada Public Service Commission issued the construction permit.

Public Utilities Commission (Idaho) - This agency coordinates review of utility development plans among Idaho state agencies and approves those plans through issuance of a permit. No permit has been issued to date.

Counties and Local Government: Of the four counties within the urban study area, all have a planning and/or zoning commission, and there are overlapping regional governments such as the Carson River Basin Council of Governments; Tahoe Regional Planning Agency; Washoe Council of Governments; and Washoe County Regional Planning Commission of Reno, Sparks, and Washoe County.

In the 10 counties within the rural study area in Nevada, there is one regional planning agency, the Central Nevada Resource Development Authority, established in 1969. Its planning area includes Esmeralda County and portions of Eureka, Lander, and Nye Counties. At the present time a preliminary comprehensive plan has been completed. The counties within this area have all completed subdivision ordinances: Lander has a zoning plan, while Eureka and Lander Counties have completed a master plan and general land use plan, respectively; Elko County has a zoning and subdivision ordinance and master plan; Humboldt County has completed a master plan, zoning and subdivision ordinances; while Pershing County has a subdivision ordinance only. Although local plans, ordinances, and zoning serve to indicate community concern with population density control and commercial development, there is little effect on population growth within the study area. At the present time transmission line proposals are reviewed by local governments only as to compliance with zoning regulations. Open space zoning in Elko County allows the construction of transmission lines without specifically addressing the specific routing (corridors). The Nevada State Planning Agency is currently studying the feasibility of corridor selection as a means of effectively routing interstate transmission line projects, however the study is only in the preliminary stages. (Directory of Local Planning Organizations - Nevada, May 1975.)

The state of Idaho has recognized five comprehensive planning agencies representing the state's six planning regions. The area involved in this study is Region IV, South Idaho Resource Planning and Development Association, which covers Twin Falls and Jerome Counties. Only one county, Twin Falls, has a completed zoning ordinance and a comprehensive land use plan.

In general, county planning boards review right-of-way proposals for compliance with county zoning classification. No formal appli-



cations to county planning boards have been required of the utility companies in either Idaho or Nevada. However, in Nevada, Sierra Pacific Power Co. has been in informal contact with county planning boards concerning their transmission line plans.

Attitudes and Expectations: - Local - In this unsettled period when people have become increasingly aware that resources are finite, there has been a more serious re-examination of values and public policies than has been witnessed for many years.

Attitudes toward the establishment of transmission lines are governed primarily by the impact of the line on current and future land uses. Since the traverse of the proposed electrical transmission line crosses lands predominantly devoted to livestock grazing (97 percent, Nevada, 82 percent, Idaho), attitudes of the rural citizenry toward the action have been negligible. This has been well illustrated by the extremely small turnouts at public meetings conducted by the applicant in the various rural communities in central and northeast Nevada.

Regional - Although there is no documentation available concerning attitudes or expectations of powerline development regionally, it can be assured that continuous and reliable power (i.e., additional power as required) is an expectation taken for granted by residents whether they are local residents residing in both small and large communities or in large regional, economically interdependent areas.

### VISUAL RESOURCE

The visual resource of the landscape can be identified as the unique combination of visual features: land surface, vegetation, and structures; as they relate to the four basic elements of form, line, color, and texture.

In the study area, five landscape character types have been identified:

- \* Basin/range type
- \* High desert plateau type
- \* Mountain type
- \* Agricultural type
- \* Foothill type

Based on the Visual Resource Inventory and Evaluation System as explained in BLM Manual 6300, visual resource management classes have been identified in the subject area. The analysis from which these classes have been taken appears in Appendix J, p. , of this document. It is suggested that this analysis be reviewed in order to understand the basic premises, criteria, and methodology of the Visual Resource Inventory and Evaluation System.



The classes identified are as follows:

Class II: These areas are highly significant visual resource zones primarily due to their high sensitivity and scenic level values. In the subject area, those areas designated as Class II and delineated on the Visual Resource Map, p. 2-73 are:

- \* A portion of the West Humboldt Range as it extends along the east side of Alternate Route 95 from Lovelock to the Mill City turnoff.

- \* A section of the Dunn-Glenn Peak area encompassing several square miles approximately 12 miles southwest of Winnemucca.

- \* Portions of the Sonoma Peak area directly south of Winnemucca, and several square miles on either side of Highway 95 as it extends north out of Winnemucca.

- \* Several square miles of the Battle Mountain Range, including North Peak, Antler Peak, and Elephant Head, directly southwest of Battle Mountain.

- \* Approximately 50 miles along the Humboldt River, starting northwest of Battle Mountain and extending to Carlin.

- \* Approximately 30 square miles along Rock Creek, directly above Boulder Flat on the north side of Interstate 80.

- \* Several square miles associated with the South Fork of the Little Humboldt River to the northwest of Midas.

- \* Approximately 50 square miles in the Beaver Creek area of the Tuscarora Mountains north of Carlin.

- \* Two smaller areas in the northern Tuscarora Mountains directly west of the town of Tuscarora.

- \* Several miles along the South Fork of the Owyhee River extending from the Idaho border and crossing the ninth standard parallel.

- \* Thirty square miles, starting at the terminus of State Route 11 in the Wilson Peak area adjacent to the Humboldt National Forest.

- \* Approximately 15 square miles adjacent to the Humboldt National Forest and the southern boundary of the Duck Valley Indian Reservation below the town of Owyhee.

- \* An area surrounding the community of Wild Horse adjacent to the National Forest.



- \* Several square miles surrounding, and to the east of, the community of Lamoille and adjacent to the Humboldt National Forest.

- \* An area of approximately 200 square miles to the south and east of the Jarbidge Wilderness Area on National Forest land.

- \* A strip of land approximately 8 miles wide and 30 miles long south of Delano Peak and to the west of Thousand Spring Creek.

- \* Several hundred square miles in the northeastern portion of the study area extending from Knoll Mountain, Blanchard Mountain and the White Peak's area in the Granite Range north toward and including Middle Stack Mountain, Grassy Mountain, and Bear Mountain, crossing into and including several square miles of southern Idaho. This area also extends to the east along the Idaho-Nevada border, including Gollaher Mountain, Sugar Loaf Peak, to the Utah border.

- \* Approximately 35 miles of the Salmon Falls Creek area from Castle Ford on the north to an area approximately 8 miles above Jackpot, Nevada.

- \* A strip of land along the east side of Highway 93 from just below the Nevada-Idaho border north through Jackpot and Idaho, terminating at Rogerson, Idaho.

- \* Approximately 25 miles along the Snake River Canyon from an area north of Buhl to an area just above Murtaugh Lake.

Class III: These areas, although not as critical as Class II in terms of sensitivity level and scenic quality, are still considered moderately significant because of their important visual resource values. Class III areas are as follows:

- \* Several units around the community of Lovelock, each one including several square miles.

- \* An area encompassing approximately the upper two-thirds of the Rye Patch Reservoir.

- \* Several square miles to the south of Dunn-Glenn Peak.

- \* Several square miles on either side of the community of Winnemucca north along the Bloody Run Hills and south into the Sonoma Range.

- \* Fifty square miles in the Fish Creek Mountains at the southwestern point of the Reese River Valley.

- \* Several square miles in the Shoshone Range extending into separate parcels south of the community of Battle Mountain.



\* Two separate areas to the west and southwest of the community of Midas.

\* Approximately 90 square miles in the area surrounding the community of Tuscarora.

\* Approximately 25 square miles on either side of Interstate 80 starting just north of Buckskin Mountain, continuing through Elko (including part of the Adobe Range) and extending north up the Humboldt River drainage.

\* About 70 square miles surrounding the Stag Mountain area directly north of the Interstate above Deeth.

\* Several smaller parcels in the area southeast of Elko, adjacent to and to the west of the Humboldt National Forest.

\* Several hundred acres north and east of Wells, Nevada, including the Antelope Peak area north of Wells, Wood's Hills to the south and east of Wells, and the community of Oasis on either side of Interstate 80.

\* An area comprising approximately 45 square miles directly to the west of the Delano Mountains.

\* Approximately 110 square miles just north of the Nevada-Idaho border in between Highway 93 and the Sawtooth National Forest commonly referred to as the Shoshone Basin.

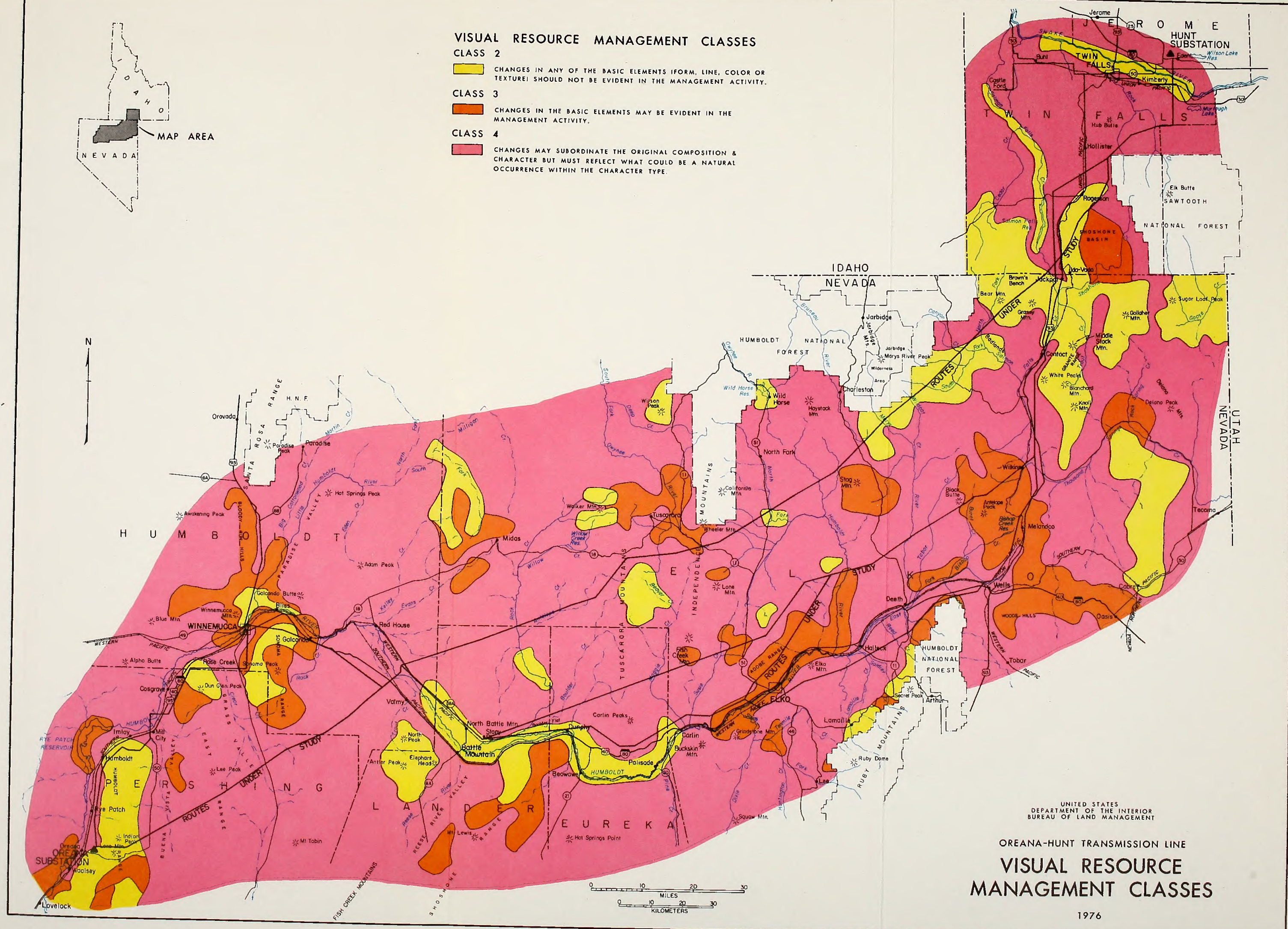
Class IV: The majority of the study area is included in Visual Resource Class IV. This class, with lower sensitivity and scenic values, can be described as generally being broad, flat expanses of lower elevation country with little variation in topographic, vegetative or water features and generally lacking the contrast in the basic elements of form, line, color, and texture evident in the other visual classes.

#### HISTORICAL/ARCHAEOLOGICAL VALUES

Intensive occupation of this part of the Great Basin began about 11,000 years ago and was based on available marshland resources around ancient lakes. A generalized adaptation to a semi-arid environment based on exploitation of seeds, roots, berries, and wildlife evolved. Late pre-historic peoples, the Paiutes and Shoshones, are thought to have radiated into the northern Great Basin about AD 1000, replacing earlier populations.

The earliest exploration in this area was by fur trappers, who were active during the 1830s. A major immigrant trail, the Humboldt River Route, was established by the 1840s. It provided access to virtually the entire length of the Humboldt River, beginning just east of Elko and extending west to the Humboldt Sink.











American settlement of the northern Great Basin began with mining camps, founded in the early 1860s; the first transcontinental railroad passed through the area in the late 1860s. Later, farming and ranching stimulated further settlement.

Known archaeological and historical information is identified on the Cultural Resources Map, p. 2-77. Blocks of archaeological information on the map are based on completed surveys in that locality. The void areas do not necessarily represent a lack of cultural material, they are primarily an indication of where surveys are lacking. Specific historical/archaeological information is available at BLM District Offices (see the District Boundaries Map, p. 2-46).

Archaeological reconnaissance of one corridor (O'Neil Basin) was completed in three parts. Parts I and II were surveyed by the Central Division of the Nevada Archaeological Survey (report on file Nevada State Museum, BLM District Offices, and Sierra Pacific Power Company), and Part III by Idaho State University, Department of Anthropology and Museum (report on file, Idaho State University; BLM State Offices, Reno and Boise; and Idaho Power Company).

Part I totals 160 miles from Tracy to Valmy, Nevada. The first 90-mile segment (Tracy to Oreana) was analyzed by BLM in the Tracy to Oreana Environmental Analysis Record (EAR).

Part II totals 150+ miles on line from Valmy, Nevada, to 1/4 mile east of Jackpot, Nevada (3.2 miles south of the Idaho border).

Part III totals 55 miles from that point on line 3.2 miles south of the Idaho/Nevada border to the Hunt substation in Idaho.

Except for a 27-mile segment that is unsurveyed due to a relocation of the original right-of-way (see Cultural Resources Map, p. 2-77), all parts have undergone archaeological reconnaissance along the right-of-way, and sites subject to direct or indirect impact by the project have been recorded and evaluated.

In Parts I and II, a systematic collection of archaeological specimens from the surface of the smaller fragile pattern sites has been completed by the Nevada Archaeological Surveys (NAS). NAS has made specific recommendations for the preservation of archaeological/historical values by strategic placement of construction.

Appropriate measures to preserve scientific, historical, and archaeological information has not been completed in Part III; however, the Idaho State University has current recommendations for cultural protection if the proposed right-of-way is granted.

A total of 151 historical and archaeological sites have been located along the O'Neil Basin Corridor. An intensive cultural reconnaissance on the other corridors has not yet been performed.



The probable occurrence of the number, type, and significance of sites in the Adobe Metropolis Corridors would be the same as those in the O'Neil Basin Corridor. A much higher occurrence is expected along the Highway Corridor, due to the presence of the Humboldt River. (Mary Rusco, NAS, see attached letter in Appendix K, p. ). The Humboldt River was a reliable water and food resource, and its terrace and older flood plains are the location of many semipermanent base camps occupied for at least the past 5,000 years. At the time of Anglo-American entry this valley supported one of the densest of northern Great Basin aboriginal populations. In addition, it was the location of historic trails and some of the earliest settlements in Northern Nevada.

In accordance with procedures outlined in 36 CFR 800.4, "The National Register of Historic Places through March 2, 1976" was consulted. There were no sites listed on the National Register that are in direct or indirect danger of the proposed or alternative routes.

The State Historic Preservation Plan of May 1975 was consulted, and no sites currently being considered for National Register nomination by the State of Nevada would be affected by any of the corridor proposals.

Efforts have been initiated to determine if any sites listed on the Idaho State Historic Preservation Plan would be affected by any of the corridors.

#### HAZARDS

There are a number of man-made and natural features that are inherently hazardous to health and safety within the study area. Because these are numerous and scattered throughout the study area, no attempt has been made to identify every specific site. Briefly summarized below are the types of hazards that commonly occur:

The most obvious man-made hazards include: highways, unimproved roads, railroads, industrial sites, communications and electrical lines and related facilities, mining activity, fences, operation of ranch and farm equipment, and the potential for hunting accidents.

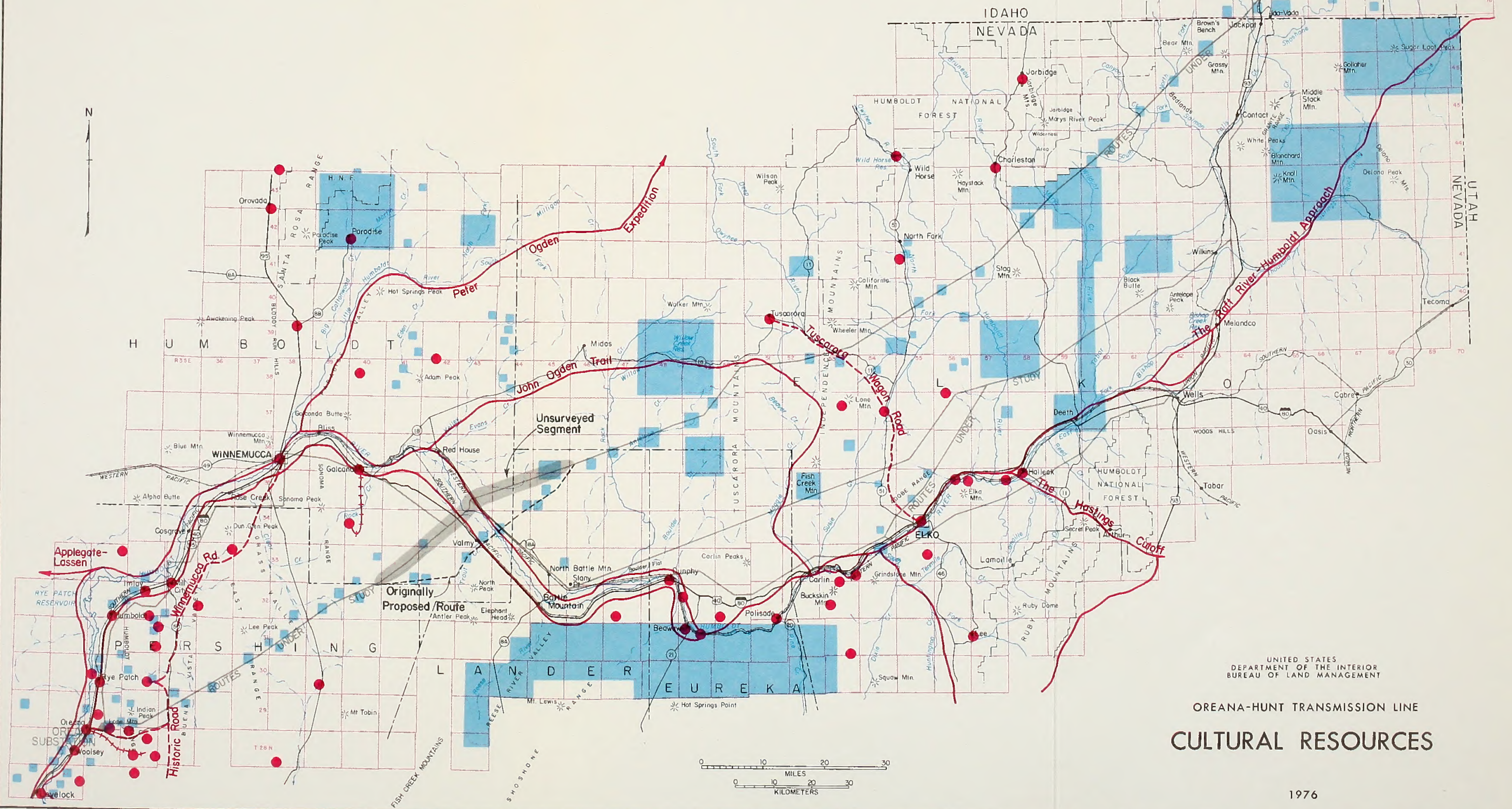
The most obvious natural hazards include: climatic extremes (heat, cold, drought, storms), natural hot springs, rangeland fires, cliffs, lakes, rivers, and the potential for flash floods, rock slides, and earthquakes. The study area lies within seismic zones 2 and 3 where there is a potential for moderate to major structural damage resulting from earthquakes.





# CULTURAL RESOURCES

- ARCHEOLOGICAL VALUES
- HISTORIC SITES
- HISTORIC TRAILS
- HISTORIC ROADS
- HISTORIC RAILROADS

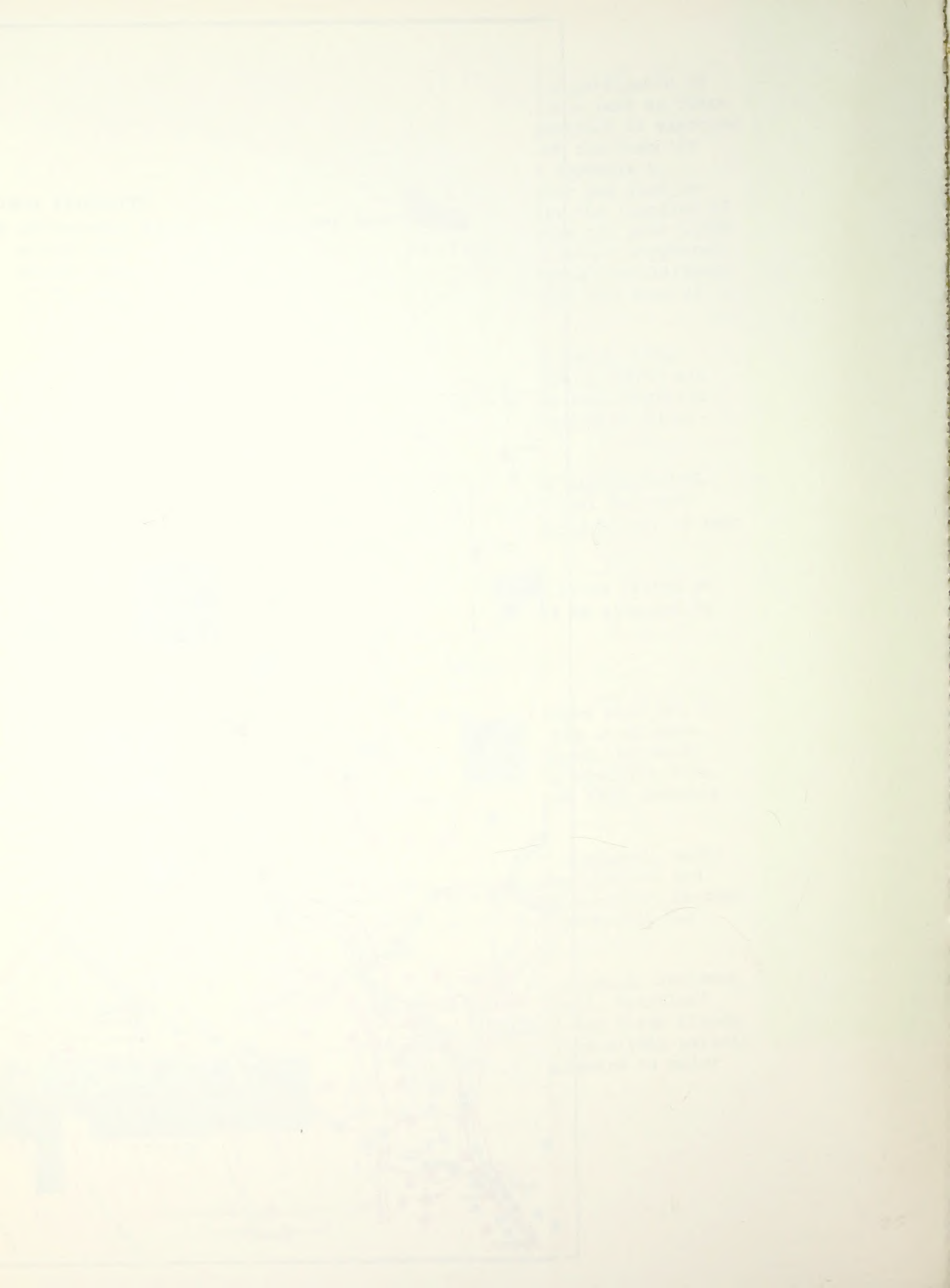


UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

## OREANA-HUNT TRANSMISSION LINE CULTURAL RESOURCES

1976







## ECOLOGICAL INTERRELATIONSHIPS

Ecological interrelationships consist of the dynamic interactions among the non-living components (sunlight, water, air, and soil), the biotic communities, and the human influence (mankind as users of the natural resources).

The nature of a particular ecosystem is determined by certain limiting factors, usually acting in combination. The most basic limiting factors are climate, terrain, and man's use of the natural resources. The factors within the non-living environment determine the kinds of vegetative growth and animal populations that will exist in an area, as well as the level of human use an area will receive.

A number of factors are of special importance to the nutrient cycling process in terrestrial ecosystems. These include soil structure, surface and subsurface hydrology, vegetative development, animal territoriality and migration, and predator-prey relationships. These factors are related in a multi-dimensional way, and any disturbance to one important link in the web may result in a disturbance throughout the entire web. The human influence and demands on natural resources significantly affect the naturally occurring components of an ecosystem.

The following matrix, Figure 2-6, is a two-dimensional representation of the key interrelationships that exist between the living and non-living components of the environment. The shaded squares indicate the key ecological interrelationships.

The interrelationships were identified through an interdisciplinary team discussion, centering on the ecological conditions specific to the study area. The environmental components were divided into 11 major headings, under which specific factors were listed. The headings and factors are listed on both axes of the matrix, forming columns and rows. At the intersection between any given column and row it is shown whether or not a key ecological interrelationship exists between the two selected factors. For example, there is a key interrelationship between erosion (under the Soil heading) and aquatic life (under Wildlife). There is only a limited interrelationship between birds of prey (Wildlife) and ground-water (Hydrology), therefore this does not show in the matrix. Although elements specific to the study area were evaluated in the interdisciplinary discussion, for the sake of brevity and clarity they were not included in the matrix.

The following discussion will elaborate on some of the key interrelationships shown in the matrix. The interrelationships that exist in the study area will also be related to the limiting factors that are at work.



FIG. 2-6 KEY ECOLOGICAL INTERRELATIONSHIPS

		CLIMATE				GEOLOGY		SOIL				HYDROLOGY		VEGETATION		WILDLIFE				LAND USE				SOCIO-ECONOMICS		RECREATION				CULTURAL		VISUAL								
		TEMPERATURE	PRECIPITATION	WIND	MICROCLIMATE	AIR QUALITY	TOPOGRAPHY	SEISMICITY	EROSION	DEPTH	PERMEABILITY	FERTILITY	ALKALINITY	TEXTURE	FLOODS/RUNOFF	GROUNDWATER	WATER QUALITY	KINDS OF PLANTS	PERCENT COVER	SUCCESSION	BIRDS OF PREY	GAME SPECIES	NON-GAME SPECIES	AQUATIC LIFE	ENDANGERED SPECIES	AGRICULTURE	GRAZING	MINING	URBAN	POPULATION	INCOME/EMPLOYMENT	SOCIAL WELL-BEING	WATER-RELATED	NON-WATER-RELATED	WINTER SPORTS	SIGHTSEEING	PRIMITIVE VALUES	ARCHEOLOGICAL/HISTORICAL	VISUAL	
CLIMATE	TEMPERATURE																																							
	PRECIPITATION																																							
	WIND																																							
	MICROCLIMATE																																							
	AIR QUALITY																																							
GEOLOGY	TOPOGRAPHY																																							
	SEISMICITY																																							
SOIL	EROSION																																							
	DEPTH																																							
	PERMEABILITY																																							
	FERTILITY																																							
	ALKALINITY																																							
HYDROLOGY	TEXTURE																																							
	FLOODS/RUNOFF																																							
	GROUNDWATER																																							
	WATER QUALITY																																							
	KINDS OF PLANTS																																							
VEGETATION	PERCENT COVER																																							
	SUCCESSION																																							
	BIRDS OF PREY																																							
WILDLIFE	GAME SPECIES																																							
	NON-GAME SPECIES																																							
	AQUATIC LIFE																																							
	ENDANGERED SPECIES																																							
LAND USE	AGRICULTURE																																							
	GRAZING																																							
	MINING																																							
	URBAN																																							
SOCIO-ECONOMICS	POPULATION																																							
	INCOME/EMPLOYMENT																																							
	SOCIAL WELL-BEING																																							
RECREATION	WATER-RELATED																																							
	NON-WATER-RELATED																																							
	WINTER SPORTS																																							
	SIGHTSEEING																																							
	PRIMITIVE VALUES																																							

One of the examples found on the matrix shows key interrelationships between soil erosion and other non-living factors such as precipitation, wind, air quality, floods/runoff, and water quality. These two-dimensional matrix representations are fundamental in illustrating the multi-dimensional nature of the relationships in the environment. The soils and erosion conditions interrelate with the vegetative communities, and wildlife, and land uses, as do the hydrologic and climatic factors.

These relationships are interwoven to include even the recreational uses an area is likely to receive. It is therefore important to remember that use of the two dimensional matrix can lead to an understanding of the multi-dimensional system of ecological interrelationships.

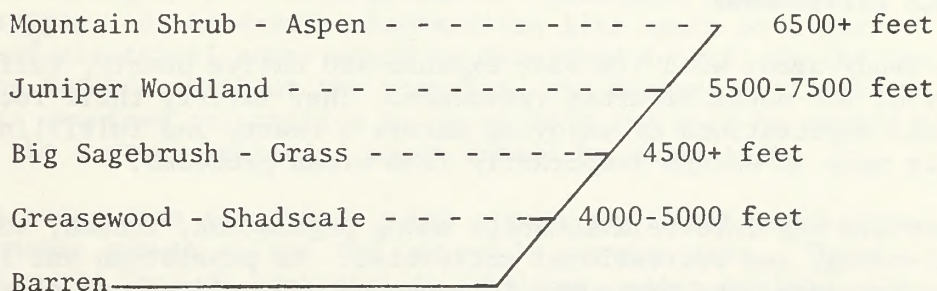


As another example, the matrix shows a key interrelationship between vegetation and wildlife. The percent of vegetative cover, kinds of plants, and plant succession directly affect game, non-game, and endangered species. Wildlife and livestock depend on vegetation for food and cover. Some animal species have specific vegetative requirements. Sage grouse, for instance, need sagebrush for winter cover, nesting cover, and food, meadows for brood rearing areas, and open, low-vegetated areas for strutting and breeding grounds. On the other hand, other animals (such as coyotes) are adaptable to a wide variety of conditions.

Within the study area, severe climatic conditions are the greatest limiting factors. Low, erratic precipitation, high wind velocities, and high summer temperatures (causing high evaporation rates) exert constraints, limiting vegetative production. Sparse vegetation will not support large animal populations. The diversity of animal life is directly related to the diversity of the vegetative community. For example, salt desert shrub communities support fewer and less diverse animal populations than other vegetative types in the area.

The basic biotic community of the study area is the cold desert biome. Eight major vegetative communities occur within the study area (see the vegetation section of this chapter, and Figure 2-7, below.) Historically, perennial grasses made up a significant part of the cold desert biome's vegetation. Overgrazing, fire (both man-induced and natural), and climatic changes have reduced the abundance of desirable vegetative species. The process of natural revegetation or successional recovery on deteriorated lands may take decades to again reach climax. (As applied to desert species, "climax" is any plant growth situation which perpetuates itself on an undisturbed site.) When dominant species and their understory communities are disturbed and plant succession is set back, less palatable plants, such as sagebrush, increase in number. With further deterioration, invaders such as cheatgrass and/or halogeton will generally become established.

FIGURE 2-7  
ELEVATION RELATIONSHIPS OF MAJOR PLANT COMMUNITIES  
WITHIN STUDY AREA





Because of the delicate ecological balance existing in the cold desert biome, many plant and animal species are highly specific as to what conditions they can successfully tolerate. Saline and alkaline conditions of the soil and water are strong limiting factors for plant growth.

The matrix also shows an interrelationship between stream flow, groundwater, and vegetative growth, particularly riparian and aquatic vegetation. Riparian vegetation requires that groundwater be close to the surface. Riparian areas are preferred habitat for many animal and bird species and are natural wildlife trails through areas surrounded by less vegetative cover. Aquatic vegetation typically includes both emergent and submergent forms.

The emergent vegetation of the Humboldt and Toulon marshes is primarily narrow-leaved cattail and alkali bulrush. The submergent marsh vegetation consists of sego pondweed, muskgrass, and widgeon grass.

The streams, ponds, and marshes are essential rest stops for many of the birds of the Pacific Flyway. These waters serve as a resident waterfowl, shorebird, marsh bird, and fish-producing habitat, providing food and aquatic vegetation. These aquatic habitats are suitable areas for fishing and duck hunting.

The aquatic community consists of cold-water streams (which support cold-water fishes) and streams that were cold-water, but have since been degraded by sedimentation and removal of over-hanging stream bank vegetation (which shades the water), resulting in increased water temperatures. The degraded streams, or portions thereof, support introduced warm-water fishes. The lower reaches of the Humboldt once held native populations of cutthroat trout, which have been replaced by introduced warm-water species, including carp and catfish.

The effects of human presence have been felt in all portions of the study area. The following uses prevail: off-road vehicle use, hunting, fishing, camping, livestock grazing, utility corridors, railroad tracks, highways, unimproved dirt roads, water projects, and some cultivation. All of these uses affect the visual experience, one of the most important aspects of quality of the human environment.

The study area, with its vast expanse and native beauty, fulfills many of the needs of urban residents. They satisfy their recreational expectations by enjoying nature's beauty and fulfilling their need to escape temporarily from urban problems.

There are key interrelationships among population, income, social well-being, and recreational activities. As population and income increase, the pressures increase on undeveloped and developed recreation areas.



Recreational activities are also affected by land use. If an area is used for agriculture, heavy grazing, or mining, recreational pursuits would be restricted if the land is privately owned. Whether or not land areas are restricted, developed lands lessen the primitive experience that many recreationists seek when hunting, camping, hiking, or fishing in the back country.

The matrix shows some key interrelationships between many environmental factors and human use of the study area. The surface disturbance caused by off-road vehicles and over-grazing by livestock has destroyed much vegetative cover, causing erosion in some areas and invasion of weedy species in others. As a result of erosion, many streams have been degraded by sediment deposits, at least at their lower reaches where water flows at slower velocities. This degradation has reduced water quality and has affected the aquatic habitats (for example, relatively clean gravel is needed for fish to spawn successfully). Over-grazing of stream bank vegetation has increased water temperatures, killing off cold-water fishes. The reduction of vegetative cover, in allowing increased wind erosion, has caused some of the more fertile soils to be blown away, exposing the hard desert pavement in some areas. Desert pavement is not conducive to re-seeding or natural revegetation. Wind erosion also causes a fugitive dust problem. Where soil composition is suitable for revegetation, limited precipitation and high daytime soil temperatures (which can occur during the growing season) often prevent revegetation of a disturbed area.

The human activity within the study area is of considerable importance because the human presence disrupts many links within the ecosystem, whether on a short-term or long-term basis. The quality of the human environment is dependent upon the harmonious functioning of the ecological interrelationships in the natural environment.

## **FUTURE ENVIRONMENT WITHOUT THE PROPOSED ACTION**

The economic life of the proposed power transmission project is expected to be about 50 years. Without the proposal, the previously indicated projected population and economic growth rates within Sierra Pacific Power Company's service area may not be realized during a short-term period of inadequate electrical power supply. An alternate transmission line route or a new source of electrical power would be developed to satisfy the increasing demand. Without the proposal, the company will fail to meet its required reliability by about 1978 and will be unable to supply the current projected power demand by about 1980.

Factors other than electrical power supply may limit population and economic growth within the company's service area. These factors could include availability of water, water quality, sewage disposal, land usage (planning and zoning), and changing public attitudes toward growth.



Increased use of lands for irrigated agriculture would continue without the project, but at a much slower rate. Without the proposal, alternate power sources such as small capacity gas turbines or diesel engines would be used on a local basis. This would require use of fuel and would create unquantifiable amounts of additional localized air pollution.

Limited water resources within groundwater basins would eventually restrict any increased use of land within the service area for irrigated agriculture over and above 30,000 acres, based on 50 percent utilization of perennial yield of the groundwater aquifer. (See Chapter 2, Agriculture, p. 2-37 and Chapter 3, p. 3-18.)

Providing power to new mining and/or processing facilities would likewise be delayed without the proposal until additional power generation or transmission lines are completed.

Without the proposal, the potential for the towns of Elko and Wells to tap an existing transmission line in Elko County, outside of Sierra Pacific Power Company's service area, would not be available. The Elko and Wells areas are expected to require additional electrical power by 1980 (see discussion on Utilities, Chapter 3, p. 3-21,) which would then necessitate an alternate source of additional power or power transmission.

Without the project, the future environmental components within the described corridors would not be affected except by natural causes or other outside agents not associated with the proposal. Alternate proposals to provide additional electrical power supplies would cause yet-to-be determined impacts.



## ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

### INTRODUCTION

Analysis and assessment of the potential impacts of the proposed action are shown in Table 1. The analysis is based on the following assumptions: (1) the proposed action is feasible; (2) the proposed action is consistent with the applicable laws, regulations, and policies; (3) the proposed action is consistent with the applicable standards; and (4) the proposed action is consistent with the applicable guidelines.

The proposed action is consistent with the applicable laws, regulations, and policies. The proposed action is consistent with the applicable standards. The proposed action is consistent with the applicable guidelines. The proposed action is consistent with the applicable laws, regulations, and policies. The proposed action is consistent with the applicable standards. The proposed action is consistent with the applicable guidelines.

## ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

### CLIMATE

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### AIR QUALITY

The proposed action is consistent with the applicable laws, regulations, and policies. The proposed action is consistent with the applicable standards. The proposed action is consistent with the applicable guidelines. The proposed action is consistent with the applicable laws, regulations, and policies. The proposed action is consistent with the applicable standards. The proposed action is consistent with the applicable guidelines.







### 3

## ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

### INTRODUCTION

Adverse and beneficial impacts described within this section are those impacts which may occur to the existing environment if Sierra Pacific Power Company's proposed transmission line construction from Oreana, Nevada, to Hunt, Idaho, is undertaken.

Potential impacts are discussed and described in relation to the four corridors previously outlined in Chapter 1. For the purposes of this analysis each corridor is considered as a general routing within which a transmission line right-of-way may be granted. Potential impacts include the following:

- (a) those which occur as direct impacts within the corridors;
- (b) those impacts which may occur outside the corridor but within the general region between Oreana, Nevada, and Hunt, Idaho;
- (c) those impacts on the social-economic structure within the general area defined as the Sierra Pacific Power Company's service area;
- (d) secondary impacts occurring downstream on the Humboldt River and the Humboldt and Toulon Marshes.
- (e) secondary impacts occurring in the primary load center (Reno-Carson City-Lake Tahoe area).

### CLIMATE

The climate of the study area would not be impacted by the construction or operation of an electrical transmission line. However, climate has influence on other impacts which are important considerations, such as soil erosion, removal of vegetation, and subsequent revegetation. These relationships and potential damage to the transmission line during climatic phenomena will be discussed under the appropriate headings.

### AIR QUALITY

Primary impacts on air quality would be similar, regardless of the corridor being considered. These impacts include dust production, vehicular emissions during construction, and corona ef-



fects and fugitive dust generation after completion of the project. Secondary impacts on air quality could be caused by population expansion made possible, in part, by increased availability of electrical power in the Reno-Carson City-Lake Tahoe area - this area being the primary load center. For a discussion of these types of impacts, the reader is referred to the Environmental Protection Agency's draft environmental statement on the Reno-Sparks sewage treatment plant expansion project (EPA, 1977).

#### PARTICULATE MATTER

Considerable quantities of particulate matter are likely to be produced locally from tower site clearing operations, tower construction, road improvements, new access construction, and general vehicular traffic along unpaved roads. Since the line would be built in successive segments, dust generation during the construction phase would be intermittent and restricted to construction access roads and that portion of the line under construction at the time. Although potentially intense in localized areas during periods of construction, dust production is not expected to be a major problem.

Fugitive dust production on disturbed areas following construction is a different matter. Here, the impact could be considered as a long-term effect over much of the length of the transmission line. Wind-caused dust pollution is already a problem in portions of the study area (see Climate Section of Chapter 2, p.2-1, and Appendix B, p.10-5), and further surface disturbance would only add to the problem. Improvement and construction of access roads would undoubtedly draw general vehicular traffic to the area, further aggravating the dust situation. Besides the health hazard associated with adverse levels of suspended particulate matter, a coating of dust on vegetation reduces the vigor and productivity of the affected plants.

#### VEHICULAR EMISSIONS

Monitored data for vehicular emissions is not available for the study area. However, exhaust emissions from construction vehicles are expected to be insignificant due to the limited number of vehicles which would be operating in any area at a particular time; additionally, frequent winds would quickly disperse those emissions that are produced, and the air sheds in the region are large, encompassing thousands of acres.

#### CORONA EFFECTS

Corona effects are produced by high voltage overhead transmission lines when the surrounding air is ionized, forming ozone and nitrogen oxides. Recently conducted intensive studies have shown



no measureable quantities of these substances at ground level near transmission lines up to 765 kv. (United States Department of the Interior, BLM, RALI Report. September, 1975, pp. III-45, 49, and 50.)

## WATER

Some stream pollution would result from transmission line construction activities wherever the line crosses live streams. During the summer, fall, and winter months the live streams of the area normally have suspended sediment concentrations of less than 1,000 ppm. Construction vehicle activity at stream crossings could increase the suspended sediment concentrations to levels approaching 5,000 ppm. During the spring months, flows are higher and the suspended sediment concentrations are greater than 1,000 ppm; construction activities at live stream crossings could increase the figure to 10,000 ppm. These increased sediment loads are not harmful to fish populations over the short-term. The immediate adverse impacts would be limited to approximately a one-day duration at each crossing, but impacts due to erosion or siltation could continue until revegetation occurs.

Of the 21 live streams crossed by the O'Neil Basin Corridor, 16 streams have existing bridges or culverts in the immediate vicinity (within three miles) of where the corridor crosses, as shown on the following table. Existing crossings eliminate the necessity for any construction activity to take place in the stream channel or riparian zone.

### Live Stream Crossings By Corridor

	<u>O'Neil</u>	<u>Highway</u>	<u>Adobe</u>	<u>Metropolis</u>
Number of streams crossed by the corridor	21	22	13	16
Number of existing crossing facilities (bridge or culvert) <u>1/</u>	16	22	12	14

1/ Data is based on the existence of bridges or culverts within three miles of where the corridor crosses a live stream.

Equipment service sites located adjacent to live streams could result in gas, oil, and human wastes being deposited through surface flow or seepage. Because the area occupied for equipment service would be small, and only temporarily used, the impact of these contaminants on water resources would be minor. Erosion at these sites could continue after the sites had been abandoned.



All four corridors cross many intermittent streams, the number of which (as with live streams) varies considerably. The adverse impacts caused by construction activities at these crossings would be minor. Disturbed soil and debris may be carried by runoff water to nearby drainages. The impacts of construction at intermittent stream crossings would be considered minor because of the existing high level of natural debris build-up and siltation, and the infrequency of surface runoff during most of the year.

Construction and operational activities adjacent to waterways may locally impact water quality. Unconsolidated fill materials could block drainages, and the removal of ground cover next to drainage channels would increase the dissolved solids and sediment concentrations during periods of streamflow. This impact would be greater when easily eroded soils are located next to waterways. Any large disturbance to channel bottoms could alter the stream courses to some extent.

Maintenance of the transmission line may require vehicle access to the tower sites. Turbidity and sediment load in nearby streams could temporarily increase as a result of possible surface disturbance during maintenance operations. (See the Erosion Hazards Map, p. 2-19.)

A portion of an authorized Corps of Engineer's project (Humboldt River and Tributaries, Nevada) consisting of Hylton, Vista, and Devil's Gate dams and lakes would be located in the vicinity of two of the corridors. The Vista and Devil's Gate lakesites, which will provide flood control, irrigation, and recreation, are in the vicinity of the Adobe Range and Metropolis Corridors. Consideration of these possible future Corps projects would be made in selecting the final alignment of the transmission line in these areas.

Secondary impacts on water quantity and quality would occur because of the increased power availability and usage of that power if the transmission line is constructed. Any community expansion would provide additional consumers of the available surface waters and groundwaters. Waters would be used to a greater extent for recreational purposes. Community expansion and agricultural irrigation would also impact the water quality by increasing the amounts of organic matter, sediments, bacteria, salts, pesticides, fertilizers, oil, and grease that would be introduced into the surface waters and groundwaters. Although the transmission line would not directly cause community expansion, the line would enhance conditions allowing for future expansion by making additional electrical power available. Secondary impacts on water quality and associated biota that may result from increased irrigation are discussed under Ecological Interrelationships, p. 3-44.



## TOPOGRAPHY

Construction of an electrical transmission line within any of the four corridors would not impact the topography in a significant way. Construction of access roads, tower pads, and storage and staging areas would require some alteration of the topography along the right-of-way. Roads, pads, and staging areas would require construction cuts and fills to provide level areas for assemblage of material, erection of towers, and vehicle travel. Sierra Pacific Power Company plans to make maximum use of existing roads. New construction access roads would have to be constructed in areas near the right-of-way that currently have no access. (See Table 1-1, p. 1-13.) These potential disturbances to the surface environment not only affect soil, vegetation, water, and visual resources, but also initiate topographical changes in the environment.

Because construction activities on steep slopes cause more severe environmental impacts, it is important to note the degree of relief of the corridors relative to each other. The O'Neil Corridor has the greatest percentage of steep terrain (slopes in excess of 20 percent), followed by the Adobe Range, the Metropolis, and the Highway Corridor, in that order.

Utilizing quantities shown on the surface disturbance Table 1-1, p. 1-13, the following percentages of steep terrain were computed:

<u>Corridor</u>	<u>Ground slopes in excess of 20% as a percentage of total</u>
O'Neil	3.66%
Adobe	2.76%
Metropolis	2.10%
Highway	1.29%

## GEOLOGY

Construction of a transmission line within any of the four corridors would have minimal impact on the geologic structure itself. Much of the construction would take place along alluvium-filled valleys where the bedrock is not exposed.

## MINERAL RESOURCES

Construction of the transmission line would have little impact on known mineral values or on current mining activity. Surface mining exploration activity in any mining area in the vicinity of the right-of-way could be temporarily halted while the transmission towers were being set in place and the transmission lines were being strung and tensioned through the mining area.



None of the four corridors passes through any operating open pit mining locations. If a valuable mineral deposit conducive to open pit mining methods should be discovered in the immediate location of the transmission line after it was in place, a relocation of the transmission towers around the proposed pit site would be necessary to accommodate open pit mining operations.

Transmission line location through an area of underground mining operations would not pose problems because shafts, tunnels, and above-ground tailings can be located to avoid direct conflict with the transmission line without restricting mining operations.

## SOILS & WATERSHED

Disturbance of the soil profile by the proposed project would create considerable impact to the environment, either directly or indirectly. The proposed construction operations would include increased use of existing unmaintained roads, construction of new access roads along the right-of-way, building of storage yards, tower base areas, and miscellaneous other areas. (See Table 3-1, below for projected estimates of soil disturbance on each soil group by a 10-foot wide road within the right-of-way on each corridor, and Table 3-2, p. 3-7 for estimates of total possible acreage of soil disturbance for the entire project by corridor.)

TABLE 3-1  
SOIL GROUP - TRANSMISSION LINE CORRIDOR RELATIONSHIP

Soil Group	O'Neil Basin			Highway Corridor			Adobe Range Corridor			Metropolis Corridor			Erosion Hazard
	% of Line	Distance (Miles)	Road Acres 1/	% of Line	Distance (Miles)	Road Acres 1/	% of Line	Distance (Miles)	Road Acres 1/	% of Line	Distance (Miles)	Road Acres 1/	
1*	--	--	--	--	--	--	--	--	--	--	--	--	Severe
2	2	6	7	3	11	13	2	6	7	2	6	7	Moderate
3	8	22	24	20	72	87	10	31	38	9	29	35	Moderate
4	1	3	4	13	47	57	9	28	34	13	42	51	Slight
5	8	22	27	5	19	23	12	37	45	7	23	28	Moderate
6	16	46	56	11	38	46	8	25	30	5	16	19	Moderate
7	--	--	--	6	23	28	7	22	27	7	23	28	Moderate
8	4	11	13	11	38	46	12	37	45	11	36	44	Moderate
9	23	67	81	19	68	82	17	56	68	29	93	113	Severe
10	21	60	73	5	18	22	15	48	58	9	29	45	Severe
11	--	--	--	1	4	5	2	6	7	2	6	7	Severe
12	17	49	59	6	22	27	6	19	23	6	19	23	Severe
Totals	100%	286	347	100%	360	436	100%	315	382	100%	322	390	

1/ Acreage determination: 10 ft. wide road on right-of-way @ 1.21 acres/mile, rounded off.  
\* No figures are shown for Soil Group 1 because none of the proposed corridors cross this group, although the group is present in the study area.

Following construction, some permanent access roads would be needed for maintenance of the line, which would tend to increase public access to remote areas.



TABLE 3-2  
ANTICIPATED SOIL DISTURBANCE BY CORRIDOR

	Acres			
	O'Neil Basin	Highway Corridor	Adobe Corridor	Metropolis Corridor
Total acres in right-of-way <u>1/</u>	4853	6109	5346	5464
Construction Access	777	470	646	570
<u>Site disturbance requirements</u> Other than roads	66	77	70	71
Total Acres	843	547	716	641
Total Miles	286	360	315	322

1/ Right-of-way = 140 ft. X 5280 ft./mi.  
43560 sq. ft./acre

= 16.9 acres/mile

16.9 acres/mile X total distance = total acres in ROW

Damage to topsoil by vehicle movement is the primary projected adverse impact and would vary among soil types. In the lower elevation areas in soil groups 2, 3, 5, and 7, natural rehabilitation will be slower because of the drier climate. (See Chapter 2, Soils, p.2-8.) Once the topsoil has been disturbed in these areas where natural plant succession is slow, scars left by machinery will remain for decades. These soils have been developing at a very slow rate for several thousand years, and most of the surfaces contain silt and very fine sands that are easily eroded by wind and water when they are dislodged. They range in depth from 8 to 24 inches. (See the Soil Groups Map, p.2-17.) Soil displacement in the lower rainfall areas would not entail as much vegetation disturbance per mile as in the higher precipitation areas, such as occur in the O'Neil Basin Corridor, but the damage would be just as permanent and wind erosion loss would be significant.

Soil in the higher rainfall areas (groups 6, 8, 9, 10, 11, and 12) would be more subject to water erosion than those in drier areas because of the effects of more precipitation on steeper slopes, but they would rehabilitate faster if erosion control measures were successful. Soil surface depth ranges are about the same as in the drier areas and would be damaged equally by vehicle travel, but would not be displaced as severely by wind action.



One mile of vehicle trail, 10 feet wide and 1 foot deep, would equal about 2420 tons of soil displacement (disturbance) and would be directly proportional to the amount of vehicle travel. The comparative values of possible disturbance from a single-lane trail under heavy use on the entire length of each corridor (in tons of soils) equals approximately:

O'Neil Basin, 286 miles X 2420 tons = 692,120 tons

Adobe Range, 762,300 tons

Metropolis, 779,240

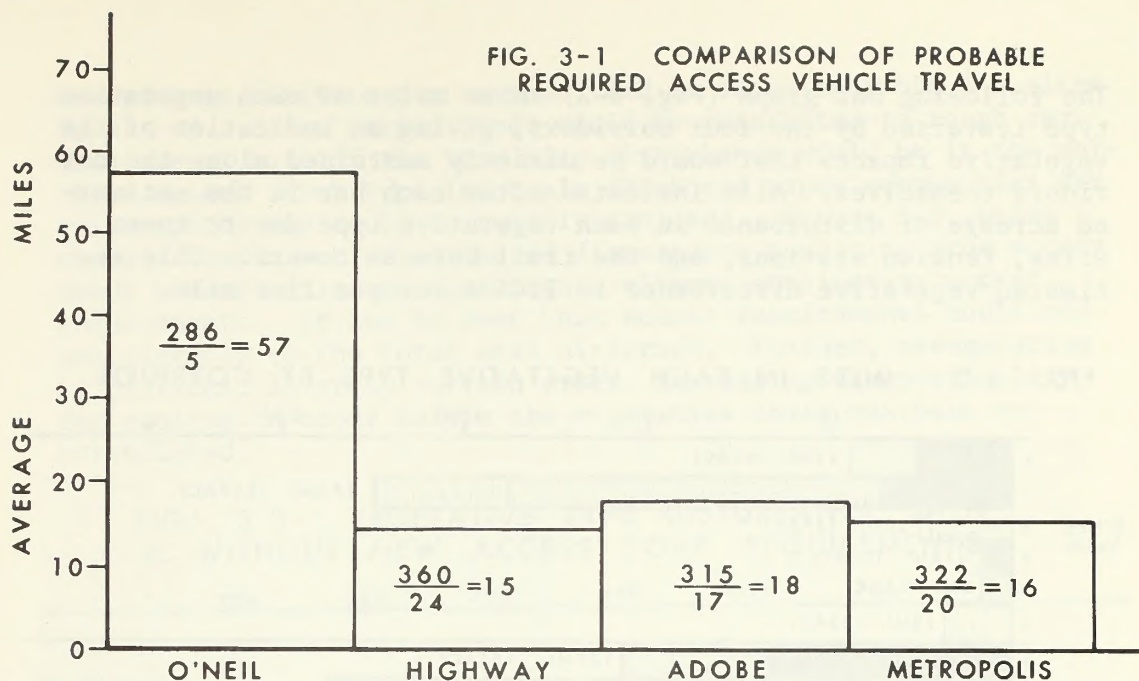
Highway Corridor, 871,200 tons

These values are raw totals, and would be conditioned mainly by the distances of each corridor from present access points, including railroads, highways, and gravel roads. They are placed here only as an example to indicate the comparison of possible soil displacement among the four corridors. A similar relationship would exist between corridors whether the soil is displaced one inch or one foot.

In summary, the most adverse impacts to soils would be due to construction and use of access and right-of-way roads and trails. It can be seen from the Soil Groups Map, p.2-17, that the greater the distance from the Highway Corridor, where the railroads and freeway exist, the more miles of access roads would be required for the project. The following bar graph (Figure 3-1) illustrates the comparative ratios of total miles to supply points for each corridor, and by inference, the soil disturbance on access roads on each right-of-way. It can be readily seen that even though the O'Neil Basin Corridor is the shortest, and entails the least soil disturbance from a one-road right-of-way standpoint, the actual soil disturbance would be greater because of the distance from potential supply points. The three remaining corridors have about the same ratios because of their proximity to the main railroad and freeway systems. These ratios are not exact comparisons because of the variable concept of a supply point. They do, however, clearly demonstrate the access requirement relationship based entirely on distances from potential supply points. Using the O'Neil Basin Corridor as an example, it is 286 miles long with five main supply points, and the ratio is  $286 \div 5 = 57$  average miles between supply points. The volume of the bar on the graph indicates required unmaintained road travel. These ratios are relative indexes of the amount of soil disturbance caused by the total travel that would be required over the same sections of road to complete the job.

Tables 3-1 and 3-2, pp. 3-6 and 3-7, and Figure 3-1, p. 3-9, illustrate that the O'Neil Basin Corridor (the shortest) entails approximately 347 acres of right-of-way disturbance as compared to 436 acres on the Highway Corridor (the longest). Table 3-2 shows the total corridor soil disturbance as being approximately 843 acres for the O'Neil Basin Corridor and 547 acres for the Highway Corridor.





**NOTE:**

VEHICLE TRAVEL ON UNMAINTAINED ROADS FOR EACH CORRIDOR DEVELOPED BY THE RATIO OF DISTANCE IN MILES OF EACH CORRIDOR DIVIDED BY THE AVERAGE NUMBER OF SUPPLY POINTS PER CORRIDOR.

THE BOTTOM FIGURES (5, 24, 17 AND 20) REPRESENT THE POTENTIAL SUPPLY POINTS BASED ON PRESENT ACCESS TO THE THE FOUR CORRIDORS.

The difference is higher due primarily to the additional requirements for access roads on the O'Neil Basin Corridor. Figure 3-1, above, substantiates this large difference by application of the distance and potential supply point ratio: 57 miles between supply points on the O'Neil Basin Corridor and 15 miles for the Highway Corridor.

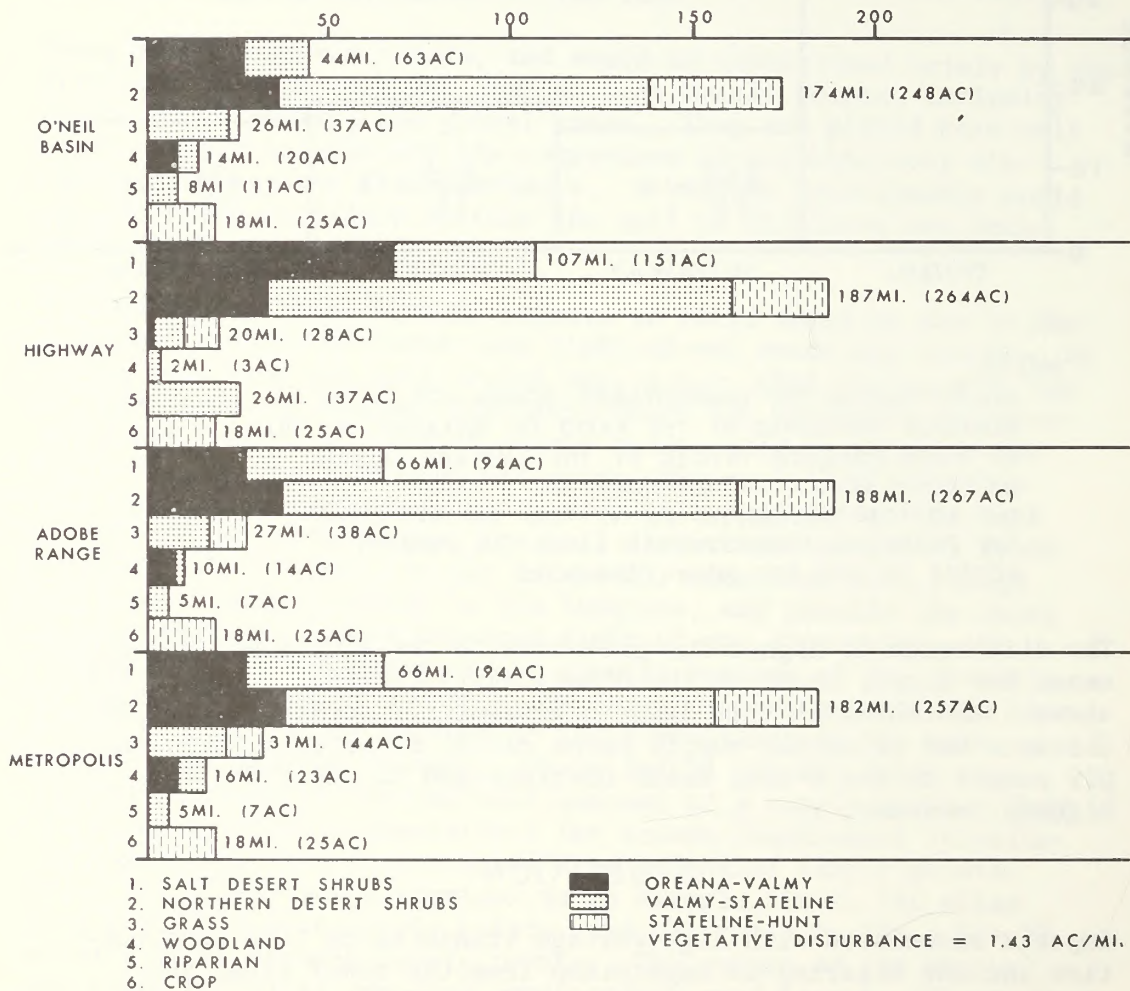
## VEGETATION

Impacts associated with high-voltage transmission line construction include clearing of vegetation from the tower sites and along the more densely vegetated portions of the right-of-way. Where new access roads are constructed and existing roads are widened, vegetation would also be removed. Other construction activities which do not require actual blading of the soil surface would still result in some trampling and crushing of vegetation. Heavy traffic along unbladed trails such as those connecting the tower sites would virtually destroy the impacted vegetation. Reestablishment of desert shrubs killed in this manner is extremely difficult, primarily due to low precipitation.



The following bar graph (Fig. 3-2) shows miles of each vegetative type traversed by the four corridors, giving an indication of the vegetative impacts that would be directly sustained along the corridors themselves. Also indicated after each bar is the estimated acreage of disturbance in each vegetative type due to tower sites, tension stations, and the trail between towers. This estimated vegetative disturbance is 1.43 acres per line mile.

FIG. 3-2 MILES IN EACH VEGETATIVE TYPE BY CORRIDOR

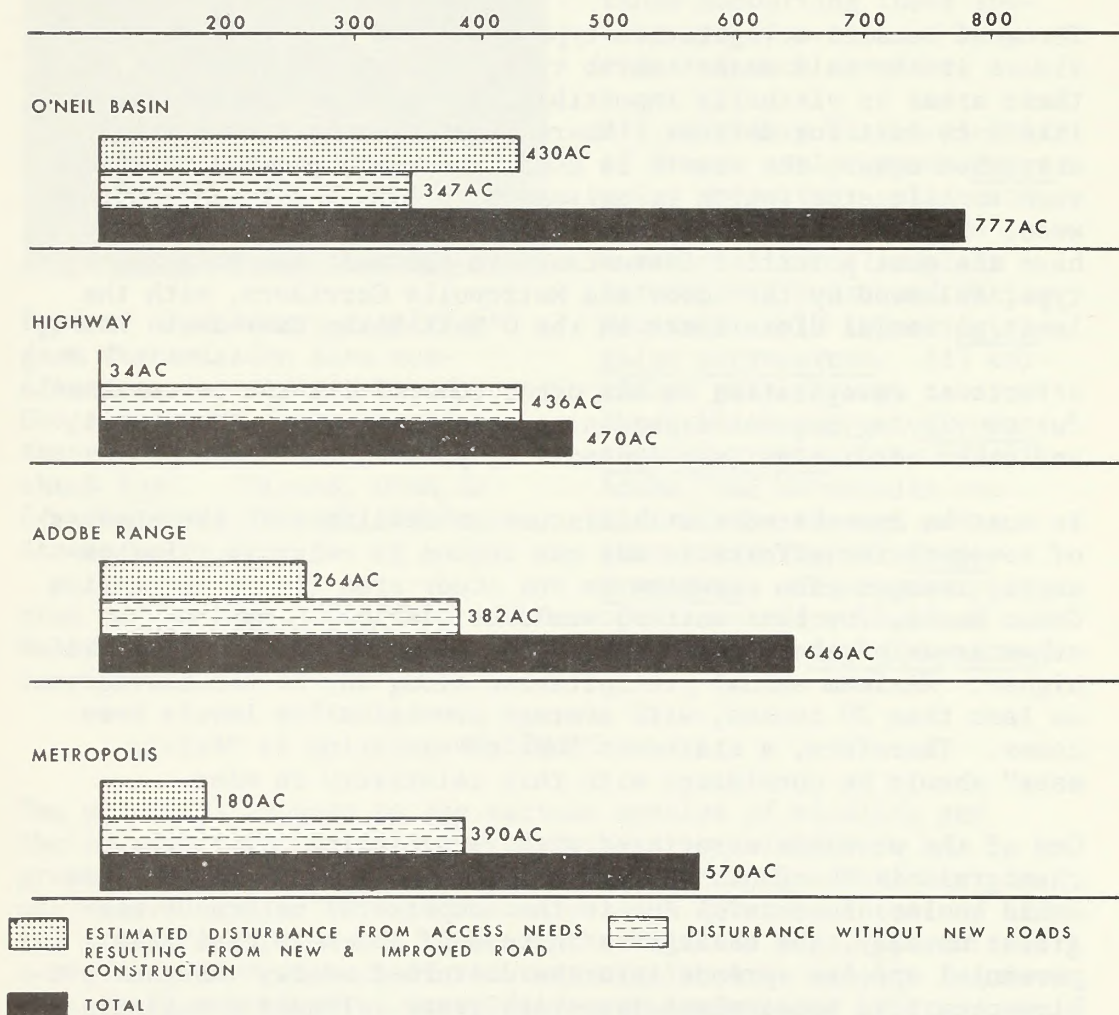


Much more difficult to assess, and in many cases of equal or higher importance, is the disturbance which would result from new construction access and improvement of existing access. The actual disturbance cannot be accurately assessed at this time because precise locations of access are not known.



However, an estimate can be made, and is shown in Table 1-1, item 3, p. 1-13. Since access needs would be restricted to rough terrain areas, most of the resulting disturbance would be in the northern desert shrub type (mountain shrub and aspen communities are quite spotty and could be readily avoided). Figure 3-3, below shows a comparison of estimated disturbance resulting from access needs versus estimated disturbance without considering access requirements. It can be seen that access requirements could add considerably to the total area disturbed. Further, revegetation is difficult in steep terrain areas, increasing the possibility for erosion to occur before the vegetative cover has been re-established.

FIG. 3-3 VEGETATIVE TYPE DISTURBANCE WITH & WITHOUT NEW ACCESS ROAD REQUIREMENTS



In the woodland vegetative type, small numbers of trees in the juniper community would have to be removed from the right-of-way within any of the four corridors. The same is not necessarily



true of the aspen community, which is scattered sufficiently so that the trees themselves could be avoided.

The riparian community typically occurs in narrow strips along drainages; therefore, the extent of impacts would be dependent on the angle at which the transmission line crosses these areas. The impacts would be considerably greater if the right-of-way crosses obliquely rather than perpendicularly across the riparian communities.

Two opposing factors need to be considered in assessing impacts to the riparian vegetative type. On the one hand, wet meadow/streambank vegetation can be fairly successfully rehabilitated. On the other hand, damage from heavy equipment activity in these areas could be severe.

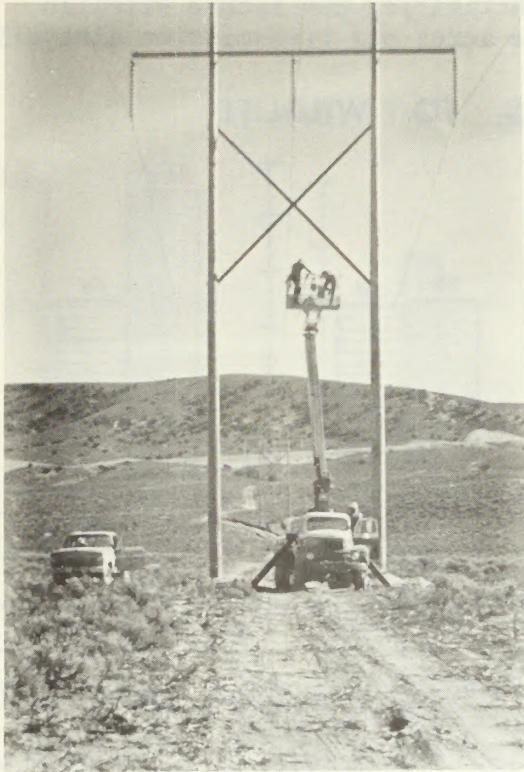
The most sensitive vegetative type traversed by any of the corridors is the salt desert shrub type. Because revegetation in these areas is virtually impossible, any surface disturbance is likely to last for decades. Where vegetation does move into disturbed areas, the result is usually a stand of weed species such as halogeton (which is poisonous to livestock), and pepperweed. Fig. 3-2, p.3-10, shows that the Highway Corridor would have the most potential disturbance in the salt desert shrub type, followed by the Adobe and Metropolis Corridors, with the least potential disturbance in the O'Neil Basin Corridor.

Efforts at revegetation in the other communities can be successful to varying degrees depending on slope, precipitation, soil, and other conditions (see Appendix E, p.10-27).

It must be remembered that a discussion dealing with the success of revegetation efforts in any one region is relative. For example, revegetation anywhere in the study area (or in the entire Great Basin, for that matter) would be difficult compared to other areas of the country where precipitation and humidity are higher. Maximum annual precipitation along any of the corridors is less than 20 inches, with average precipitation levels even lower. Therefore, a statement that revegetation is "fairly easy" should be considered with this relativity in mind.

One of the problems associated with revegetation occurs where cheatgrass is abundant. Revegetation techniques in these areas would be less successful due to the competitive nature of the grass; usually, the cheatgrass instead of the more desirable perennial species spreads into the disturbed areas. Another problem occurs in areas where livestock graze. Tender new plants are generally more desirable forage than the existing plants, and livestock tend to congregate in newly seeded areas, preventing the establishment of the new plants. (Impacts to cropland are treated under the Land Uses section, p.3-18.)





*Typical disturbance resulting from transmission line construction in northern Nevada. Cross-braced H-frame towers traversing northern desert shrub type. (Sigurd, Utah, to Ft. Churchill, Nevada, 230 kv transmission line.)*

tion of the Highway, Adobe, and Metropolis corridors between Wells and Stateline passes through an area where Lepidium nanum is reported.

Potential impacts to threatened or endangered flora can be described only in a general manner due to the lack of definitive data. Construction activities, including road building, vegetative removal, and overland travel could damage or destroy some of these plants. Portions of all the corridors pass near areas where threatened or endangered flora have been reported. (See Vegetation Map, p. 2-27.) Habitats similar to those supporting these species are also crossed by portions of each corridor.

All corridors in the vicinity of Oreana could impact Astragalus porrectus. All corridors passing through the Humboldt River floodplain between Red House and Battle Mountain could impact Astragalus pterocarpus. All corridors pass through habitat areas which support Cryptantha interrupta. The O'Neil, Adobe, and Metropolis corridors pass through areas that could support Draba douglasii. The common por-

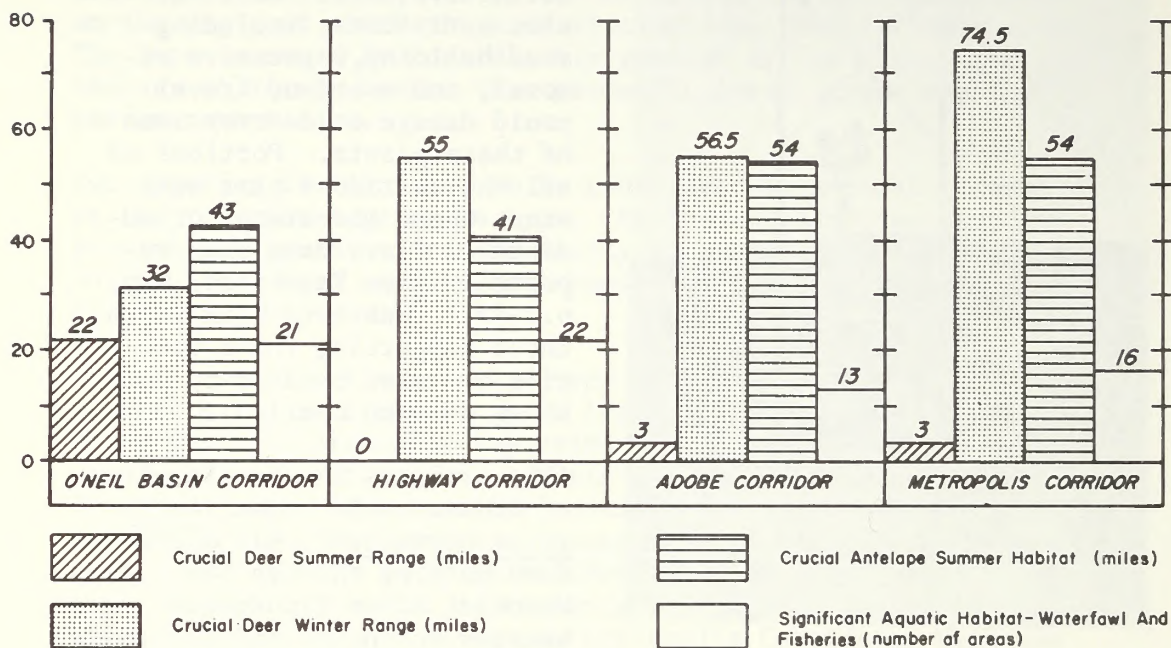
## WILDLIFE

The potential impacts to the various species of wildlife and their respective habitats are quantified by corridor on bar graphs (see Figures 3-4 and 3-5, pp. 3-14 and 3-15). Potential impacts were derived through an analysis of corridor locations and the wildlife habitats as shown on the Wildlife Maps, pp. 2-33 and 2-35. The primary impact of the transmission line and its required construction activities to wildlife populations and habitats would be removal of vegetation, which represents wildlife food, nesting, or fawning cover, or winter protective cover; human activity, which may cause disturbance to some wildlife populations; and physical disturbance to aquatic habitat. Road construc-



tion and other surface disturbing activities may reduce wildlife habitat at the rate of two to three acres per transmission line mile.

FIG. 3-4 IMPACTS TO WILDLIFE



### TERRESTRIAL

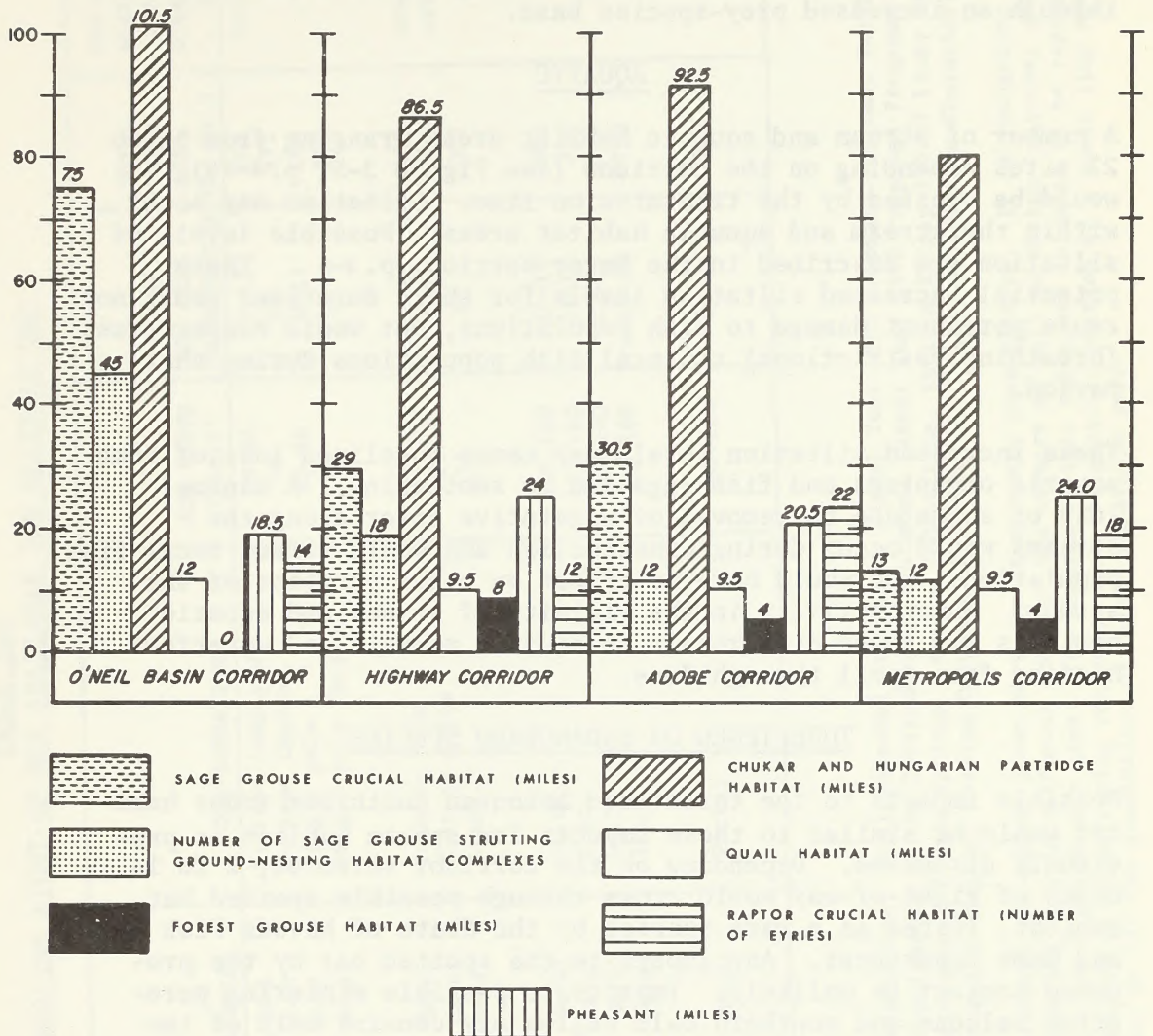
Construction activity and additional construction access with associated human activities may cause disturbance to wintering or fawning big game species. These disruptive activities could adversely affect local populations of mule deer and antelope. Due to the extensive acreage of existing mule deer and antelope habitat, as shown on the Big Game and Fisheries Map, p.2-33, the potential loss of 290 to 400 acres of big game habitat, depending on the corridor selected, would not significantly affect the overall mule deer or antelope populations, but may have localized adverse impacts on mule deer and antelope herds existing on restricted critical ranges.

Alteration of vegetation within sage grouse strutting ground-nesting complexes and disturbance during the strutting-nesting period from March through May could result in the permanent lowering of the year-to-year sage grouse population. If protective winter and nesting cover within the critical upland game habitat areas were removed, the impact on these species would be adverse, since these plants are necessary for both food and shelter. Upland game species which may be adversely affected in-



clude mourning doves, which nest throughout the area, chukar and Hungarian partridge, quail, forest grouse, and pheasants.

FIG. 3-5 IMPACTS TO WILDLIFE



Construction activities in the near vicinity of raptor nesting sites could cause abandonment of from 12 to 22 known raptor eyries. Transmission towers placed adjacent to roads could lead to increased indiscriminate shooting of perching raptors. Transmission phase lines within concentration areas of raptors could lead to limited impact death of raptors. Because of the wide spacing of the phase lines, electrocution of perching raptors is not likely to occur. Increased vehicular activity would be likely to occur due to increased and/or improved access for construction and maintenance, which could lead to harassment of wildlife during stress periods.



Towers may serve as hunting perches for raptors in treeless terrain, thus increasing raptor hunting areas. Disturbance to existing vegetation by construction activities could result in sub-climax vegetative cover which would in turn result in increased rodent population, thus benefiting raptor populations through an increased prey-species base.

#### AQUATIC

A number of stream and aquatic habitat areas, ranging from 13 to 22 sites depending on the corridor (see Figure 3-5, p.3-15), would be crossed by the transmission line. Siltation may occur within the stream and aquatic habitat areas. Possible levels of siltation are described in the Water section, p.3-3 . These potential increased siltation levels for short durations would not cause permanent damage to fish populations, but would cause stress (breathing restrictions) to local fish populations during that period.

These increased siltation levels may cause localized loss of some aquatic organisms and fish eggs due to smothering. A minimal loss of shade due to removal of vegetative cover along the streams would occur during construction and would affect local fish populations, but would have no effect on other portions of the stream. Human activity in the vicinity of stream and aquatic habitats may cause disturbance to aquatic mammals and waterfowl nesting from April through June.

#### THREATENED OR ENDANGERED SPECIES

Possible impacts to the threatened Lahontan cutthroat trout habitat would be similar to those impacts for stream habitat as previously discussed. Depending on the corridor selected, 2 to 14 miles of right-of-way would cross through possible spotted bat habitat, listed as a rare species by the State of Nevada Fish and Game Department. Any impact to the spotted bat by the proposed project is unlikely. Impacts to possible wintering peregrine falcons and southern bald eagles may consist only of the remote possibility of impact deaths.

#### LAND USES & OWNERSHIP

##### LAND CHARACTERISTICS

Due to the linear aspect of a transmission line system, the lines have the potential of impacting many different land uses. However, two principal land uses along the various corridor routes have been identified: (1) agricultural stock grazing and (2) recreation. Since these two primary uses are extensive rather than intensive, impacts of a transmission line are expected to be minimal, in that over 99 percent of the transmission right-of-way area would be available for other uses. (See Table 3-3, p. 3-17.)



TABLE 3-3  
POWERLINE RIGHT-OF-WAY AVAILABLE FOR MULTIPLE USE

kV	SYSTEM TYPE (CIRCUITS)	MATERIAL	CONFIGURATION	ROW WIDTH (Feet) <sup>1</sup>	TOTAL ROW AREA (ACRES/MILE)	TOTAL TOWER AREA (sq.ft.)	ROW AREA AVAILABLE FOR OTHER USE (%)
115	Single or Double	Wood	H-frame (unguyed)	50-90	6-13	275	over 99
115	Single or Double	Wood	H-frame (guyed)	90	13	675	99
115	Single or Double	Wood	Single pole	50-90	6-13	100	99
115	Single or Double	Wood	Single pole (guyed)	90	13	300	99
230	Double	Metal	Tubular Pole	125	14-15	100	over 99
230	Single	Metal	Flat or delta	125	14-15	400	over 99
230	Double	Metal	Stack	125	14	1000	98
500	Single	Metal	Delta	125-160	15-19	900	99
500	Single	Metal	Flat	125-160	15-19	700	99
500	Double	Metal	Delta	125-160	15-19	1200	98
500	Double	Metal	Stack	125-160	15-19	1700	98
765	Single	Metal	Portal	180-220	21-26	3200	89-91

Sources: Bonneville Power Administration: Environmental Statement, Fiscal Year 1975 Proposed Program, Facility Evaluation Appendix; Supplements to the Environmental Statement Fiscal Year 1976 Proposed Program: Lower Snake Grid Reinforcement, Pebble Springs - Marion 500-kV Line, Shelton-Kitsap 230-kV Line; General Construction and Maintenance Program; Working Document of Transmission Line Construction Characteristics.

It is important to emphasize that the widths given here are in no sense prescriptive. It is recognized that the widths for particular voltages may vary in different areas of the country as well as design features, and special conditions that may exist for a particular line. The figures in this table are intended to be representative only, and are provided for the purpose of illustrating the point that the greatest portion of a power line ROW is actually left free, as open space or for the possibility of other compatible uses.



### AGRICULTURE - EXISTING

The impact on irrigated agriculture from the construction of a transmission line would be that, under the worst circumstances, the line could remove land from production, and interrupt farming activities during construction and maintenance operations. However, in Nevada and that portion of southern Idaho within the study area the corridors would traverse less than 200 cultivated acres, with the majority of these acres being located along that segment common to all four corridors extending from the northern boundary of the Sawtooth National Forest to Hunt, Idaho. (See the Study Area Map, p. 1-5.) This segment traverses section lines the entire distance to Hunt, Idaho, and it is expected that impacts would be minimal due to the fact that along this segment, roads, fences, and fields are in most cases laid out along section lines. Given this set of circumstances, and the fact that transmission lines take very little land out of production, the overall impact on existing agricultural development would be minimal. (See Table 3-3, p. 3-17, and photograph, p. 3-19.)

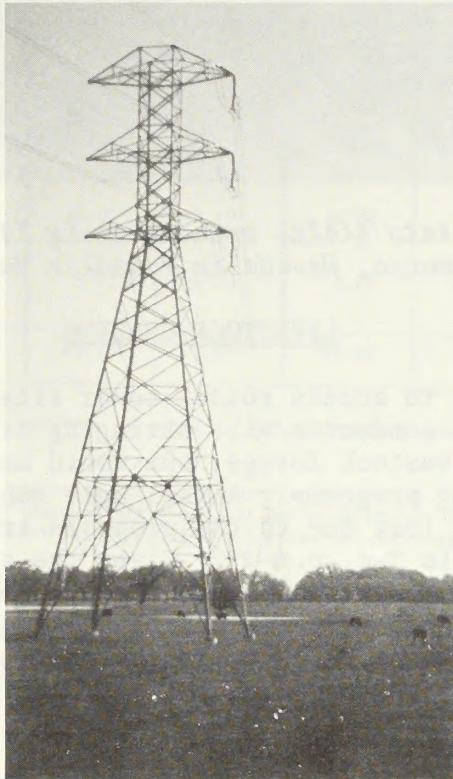
### AGRICULTURE - POTENTIAL

A more important aspect of the agriculture/transmission line relationship is the effect on potential new agricultural lands. (See Table 2-3, p. 2-41.) Although 30,000 acres have been identified as "potential" based on physical factors, it is the institutional constraints that most probably would preclude full development of these acres. At the present time these constraints are: (1) checkerboard land pattern in the prospective areas (See the Land Status and Agricultural Potential Maps, pp. 2-39 and 2-38), (2) capital intensive nature of bringing new lands into production, and (3) reliable electrical power availability. Checkerboard land pattern constraints are based primarily on the fact that in Nevada there are no agricultural entry programs available that would transfer BLM land into private ownership. However, at the present time there is a study underway that may re-open an agricultural development program within the state. New agricultural developments require large sums of capital which may preclude small family operations and, in combination with unreliable power availability, can inhibit development completely. In essence, it can be expected that any new agricultural lands within the Lovelock District would be located on private lands and as Table 2-3, p. 2-41 indicates, these lands most probably would be in Eureka, Pershing, and Humboldt Counties.

With the existence of new sources of reliable and continuous power (i.e., the proposed Valmy power plant) located in an area where the availability of electrical power has been one of the limiting factors in agricultural development, it is expected that those lands would be developed where agricultural water



applications have been issued by the Nevada Department of Water Resources. (See Chapter 2, Land Uses - Agriculture, p.2-37, which states that approximately 11,200 acres fall within this classification.) Impacts associated with increased agricultural/irrigation are discussed in the water section of this Chapter, p.3-3, and in the Ecological Interrelationships section, p. 3-44.



*Traverse of high-voltage transmission line through agricultural land. Note that there is little disturbance with current land uses.*





*Stabilized potato fields approximately 20 miles northeast of Winnemucca, Nevada in Paradise Valley*

#### LIVESTOCK GRAZING

Loss of vegetation to access roads, tower sites, substations, storage yards, and conductor/wire stringing sites would reduce total available livestock forage, but would have no real effect on existing grazing programs. Animal unit months of livestock forage potentially lost due to the proposed transmission routes can be seen in Table 3-4, p. 3-21. Given the small number of AUMs that would be lost, the impact on livestock forage would be considered minimal. Secondary impacts on existing livestock operations would be crossing of range fences and livestock watering locations; however, these activities would be of negligible impact.

#### MINERAL ACTIVITIES

There would be no known impacts on mineral development along the traverse of the four corridors. (See the Mineral Resources section of this Chapter, p. 3-5.)

#### TRANSPORTATION

##### ROADS

For potential impacts caused by corridor crossings of major highways and traffic counts at those crossings, see Table 3-5, p. 3-22.

##### RAIL

Railroad communications may be disrupted. The Highway, Adobe Range, and Metropolis Corridors parallel the tracks for long distances. Corridor crossings of tracks are: O'Neil, 5; Highway, 14; Adobe, 7; and Metropolis, 7.



TABLE 3-4  
SUMMARY OF LIVESTOCK GRAZING DISTURBANCE BY SEGMENT  
BY CORRIDOR 1/

Segment <u>2/</u>	O'Neil Basin Corridor		Highway Corridor		Adobe Range Corridor		Metropolis Corridor	
	Per- <u>3/</u> manent Loss (AUMs)	Tem- <u>4/</u> porary Loss (AUMs)	Per- manent Loss (AUMs)	Tem- porary Loss (AUMs)	Per- manent Loss (AUMs)	Tem- porary Loss (AUMs)	Per- manent Loss (AUMs)	Tem- porary Loss (AUMs)
Oreana-Valmy	8.16	0.41	5.75	0.53	8.16	0.41	8.16	0.41
Valmy- Stateline	47.10	1.97	26.00	2.19	36.30	2.16	29.57	2.18
Stateline- Hunt	10.96	0.86	9.62	0.88	9.62	0.88	9.62	0.88
TOTAL AUMS	66.22	3.24	41.37	3.60	54.08	3.45	47.35	3.47

1/ See Table 1-1 indicating miles of corridor by segment, and delineating access needs; site construction data; substation disturbance.

2/ These segments are common to all corridors and are primarily located in: (1) Winnemucca District (Oreana-Valmy), (2) Elko District (Valmy-Stateline), (3) Burley District (Stateline-Hunt). Estimation of carrying capacity for these Districts are 24, 11 and 8 acres per AUM respectively. These figures were used to calculate disturbance.

3/ Permanent loss of AUMs based on total utilization of land needed for: (1) access roads, (2) centerline access road. See Table 1-1., (3) tower sites, (4) Substations.

4/ Temporary loss of AUMs based primarily on site construction characteristics: (1) area needed for crane pads, (2) tension stations, (3) storage yards.

## RIVERS

Corridor crossings of major river systems include the Humboldt and Snake Rivers. Impacts caused by construction would be minimal because construction equipment would not enter these water-courses.

## UTILITIES

The power supplied to the towns of Elko and Wells, Nevada, is a single loop feed from southern Idaho along an existing 138 kv line that, according to the general managers of Nevada Power Company (Elko) and Wells Rural Electric Company (Wells), will reach its maximum transmission capacity by 1980. At that time, it is expected that the Elko and Wells areas will need additional power. Sierra Pacific Power Company has agreed to allow Idaho Power to "tap" the proposed transmission in order to supply the needs of its Nevada customers. Also, Sierra Pacific has agreed in a public hearing to negotiate in good faith with Wells Rural Electric Company concerning a "tap" on intertie #2 should they desire. Sierra Pacific has also stated that at the time addi-



tional power is required in Elko County, each utility will have to evaluate the various sources and determine the best alternative. According to the Nevada Power Company in Elko, the only viable alternative is a "substation tap" at a yet-to-be determined location. Wells Rural Electric Company has stated that they would like to see the proposed line aligned parallel to the existing 138 kv line from Idaho, while Nevada Power Company has expressed a desire to minimize the length of a distribution line that would "tap" any new substation located within Elko County.

**TABLE 3-5**  
**POTENTIAL FOR ELECTRONIC AND VISUAL INTERFERENCE**

Corridor	Corridor Crossings of Major Highways			Traffic Volume (1972* & 1973): Average No. of Vehicles Per Day
	Highway No.	No. of Times	Place	
O'Neil Basin	N-50	1	Buena Vista Valley	25
	I-80	1	near Valmy	3370
	N-11	1	near Taylor Canyon	70
	N-51	1	near Mahala Creek	235
	US-93	1	near Meteor, Idaho	1500*
	US-30	1	near Hansen	1500*
	I-80N	1	east of Id-25	7000*
	Id-25	1	near Eden	800*
Highway	I-80	1	west of Mill City	4010
	I-80	1	north of Mill City	4050
	I-80	2	east of Winnemucca	3770
	I-80	1	near Valmy	3370
	I-80	1	southwest of Elko	4100
	N-46	1	east of Elko	1275
	N-11	1	southeast of Halleck	85
	I-80	1	Wells	3420
	US-93	1	near Shores Siding	1010
	US-93	1	Contact	1025
	US-93	1	Amsterdam, Idaho	1700*
	US-30	1	near Hansen	1500*
	I-80N	1	east of Id-25	7000*
	Id-25	1	near Eden	800*
Adobe Range	N-50	1	Buena Vista Valley	25
	I-80	1	near Valmy	3370
	N-51 & 11	1	north of Adobe Range	360
	US-93	1	near Shores Siding	1010
	US-93	1	Contact	1025
	US-93	1	Amsterdam, Idaho	1700*
	US-30	1	near Hansen	1500*
	I-80N	1	east of Id-25	7000*
	Id-25	1	near Eden	800*
Metropolis	N-50	1	Buena Vista Valley	25
	I-80	1	near Valmy	3370
	N-51 & 11	1	northwest of Elko	535
	US-93	1	near Shores Siding	1010
	US-93	1	Contact	1025
	US-93	1	Amsterdam, Idaho	1700*
	US-30	1	near Hansen	1500*
	I-80N	1	east of Id-25	7000*
	Id-25	1	near Eden	800*



## INTERRELATIONSHIPS WITH OTHER TRANSMISSION SYSTEMS

The Tracy to Hunt 345 kv transmission line would connect directly with others in the Sierra Pacific Power system and through these lines with other utility transmission systems. (See Transmission Line Interties Map, p. 1-24.) The key to these interconnections are existing and proposed substations which would control and distribute bulk power from the transmission lines.

At the present time Sierra Pacific Power Company has contracts with Utah Power and Light Company for 50 megawatts (Mw) of power now, 150 Mw by October 1977, and 200 Mw by October 1978. One-half of the 150 Mw for 1977 and 200 Mw in 1978 would be carried on each intertie line. These interties have been designated: (1) Intertie #1 (Sigurd Substation, Utah, to Fort Churchill Substation, Nevada). This intertie is now completed and was energized in June 1975. Fifty Mw of power are delivered over this line to Fort Churchill substation while an additional 50 Mw are "wheeled" for distribution within Mt. Wheeler's system. Wheeler is a rural cooperative out of Ely, Nevada, primarily serving central Nevada customers. Intertie #1 has been designated at a 230 kv configuration to deliver a maximum 150 Mw, which is well within its nominal transfer capability of 188 Mw. No upgrading to 345 kv configuration is expected. This intertie would also facilitate a power supply expansion into central Lander County via connection with the Austin, Nevada, substation. (2) Intertie #2 (Hunt, Idaho, substation to Tracy generation/substation, Nevada). This proposed interconnection with Utah Power and Light Company via the Idaho Power hydroelectric system is expected to deliver the remaining 150 Mw from Utah Power and Light to Sierra Pacific's primary load center (Reno, Sparks, Carson City, and Lake Tahoe area). With the establishment of the North Valmy substation, the need for existing peaking generation stations in Winnemucca and Battle Mountain, Nevada, would be eliminated, and the reliability of the 120 kv feed from the Oreana substation to the above mentioned towns would be greatly increased due to the "looped" nature of the system. Construction of Intertie #2 would be at a 345 kv configuration; however, the transmission line would be energized initially at 230 kv. The nominal power transfer capability of this intertie would increase to 282 Mw. Completion of construction of Intertie #2 would increase Sierra Pacific's power purchasing by 285 percent, and connect Sierra with three other utility transmission systems:

- |  |   |                           |
|--|---|---------------------------|
| (1) Pacific Gas & Electric Co. (Calif.)        | - | 108 megawatts Existing    |
| (2) Utah Power & Light Co. (Utah)              | - | 100 megawatts Intertie #1 |
| (3) Utah Power & Light Co. via Idaho Power Co. | - | 100 megawatts Intertie #2 |

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Power Purchase Total	308 megawatts
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Intertie #2 would also play an integral part in Sierra Pacific's proposed North Valmy coal-fired generation station. Installation of the first 250 Mw unit, planned for September 1981 would require two transmission lines from the plant. In this regard, Sierra plans to use Intertie #2 (Tracy-Hunt 345 kv transmission line) through the proposed North Valmy substation, as one of the two lines. A 230/345 kv line is associated with the North Valmy project which would connect with the Austin substation and Intertie #1.

With the completion of the second 250 Mw unit of the North Valmy coal-fired station in 1984, Sierra Pacific's total supply capacity would increase to 1,374 Mw, or 103 percent from the 1974 base year production of 674 Mw. At this time an additional 230/345 kv line would be constructed from the North Valmy station to the Reno area. In effect, Sierra Pacific would have more than doubled its total supply capacity in nine years.

#### Phase 1

<u>Intertie #1</u>	<u>Intertie #2</u>	<u>North Valmy Station</u>
100 Mw	100 Mw	500 Mw

#### RECREATION

Impacts to the recreationist and recreation resources vary in degree and intensity, and the effects of certain impacts may differ between individuals or groups. Even though the impacts of the transmission line vary in degree and intensity, they can be categorized and grouped under the following headings: (a) Physical Impacts to the Recreation Resource, (b) Specific Recreation Activity Impacts, and (c) Impacts to the Total Recreation Experience of Individuals and Groups. A brief discussion of these types follows. (Refer to recreation discussion, Chapter 2, p. 2-45, for an **explanation** of the recreation resources.)

#### PHYSICAL IMPACTS TO THE RECREATION RESOURCE

Physical impacts are the direct impacts of transmission line construction that alter or change the recreation resource. This includes road and tower site surface disturbances and the physical presence of the tower structures and lines. Recreation resources affected by physical impacts are: specifically located natural land and vegetative areas used for sightseeing and collecting activities, and structures and developments designed for public use and conservation, such as roadside rest areas and established campgrounds. Physical impacts would vary in intensity the closer the right-of-way is to the resource. Minimal impacts would occur when towers and/or lines are screened from view or are in the background visual zone.



## SPECIFIC RECREATION ACTIVITY IMPACTS

Activity impacts are those usually resulting from a specific transmission line construction phase that alters the degree of success of a particular recreation activity. Some examples of activity impacts directly related to transmission line construction practices are:

... A fisherman's success ratio is lessened by a reduced fish population due to stream erosion and contamination caused by improper road construction techniques.

... A recreationist's geological sightseeing experience will be lessened if a unique geological formation he is viewing has been damaged by construction equipment.

... The creation of additional off-highway roads would result in a more successful outing for the off-road vehicle enthusiast.

## IMPACTS TO THE TOTAL RECREATION EXPERIENCE OF INDIVIDUALS AND GROUPS

Recreation observations, questionnaires, and studies demonstrate that even though a recreationist identifies with a specific recreation activity for a particular outing, he actually is involved in several interrelated activities. A good example of this is illustrated in Human Dimensions in Wildlife Programs: Reports of Recent Investigations (Hendee and Schoenfeld, 1973). In this publication, several hunter surveys were conducted. The hunting experience involved a variety of recreation activities, and bagging game was not considered a major factor. In fact, nature appreciation, operating specialized equipment, and socializing with fellow hunters were all considered more important than bagging the game.

Impacts to the total recreation experience may result from the transmission line affecting the attitudes and emotions of the individuals and groups concerned with the recreation area it penetrates. (A subjective impact which cannot be quantified.) Recreation concentration areas shown on the Recreation Activities Map, p.2-55, best identify the total recreation opportunities individuals and groups are primarily concerned with. (See Table G-1, p.10-54, for types of impacts and approximate location by corridor and line segment.)

The above analysis has considered the type of impact upon the recreationist and the recreation resource, but has not discussed the severity of those impacts. The severity of impacts on the recreation resources (or values) would be directly related to the types of terrain penetrated, the recreationist, and the concentrations, varieties, and importance of the resources or values.



There are a large number of impacts identified on the Highway Corridor; however, the recreationists participating in activities in this corridor are familiar with visual man-made intrusions such as the Southern Pacific and Western Pacific Railroads, Interstate 80, Highway 93, overhead transmission lines, and communities and residences all along the line location. The Highway Corridor is located along the valley base where the impact of the transmission line being skylined would be lessened. The major recreation uses associated with the Highway Corridor involve the Humboldt River, where sightseeing and water-related activities occur. For these reasons, the Highway Corridor is expected to have the least impact on the recreationist and the recreation resource.

The Adobe and Metropolis Corridors penetrate a foothill terrain where recreation activities are non-water related, i.e., hunting, rock collecting, and off-road vehicles. The corridor alignments would be within a short driving distance of the Battle Mountain, Carlin, and Elko communities. Recreationists from these communities use the area crossed by these corridors for short-term outings. Two proposed reservoirs, Devil's Gate and Vista, would be impacted by these corridor locations. This means a physical impact upon the reservoirs' development occurs within the foreground of the proposed Devil's Gate Reservoir and across the water body of the proposed Vista Reservoir. When development is complete, the recreation usage associated with these reservoirs will be strictly water-related, i.e., fishing, waterfowl hunting, water skiing, swimming, and boating. Considering the amount and type of use, and the area penetrated by line construction, the severity of impact to the recreationist and recreation resource on the Adobe and Metropolis Corridors is expected to be higher than the Highway Corridor, but not as great as in the O'Neil Basin Corridor.

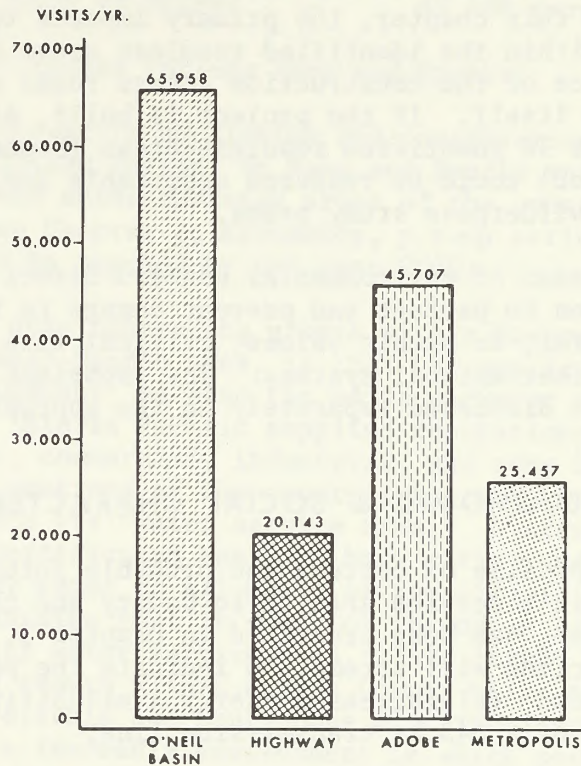
The most severe impact of transmission line construction upon the recreationist and on the recreation resource is expected on the O'Neil Basin Corridor. The highest concentrations and widest range of recreation opportunities exist along the O'Neil Basin Corridor, especially within the mountainous terrain south of the Humboldt National Forest.

Recreation use of this area is destination-oriented, where visitors stay for extended periods of time. Of all the corridors, the O'Neil Basin Corridor is farthest removed from man's activities. In this area the most noticeable man-made intrusion is off-highway roads. Because of the mountainous terrain, the opportunity of the transmission line being skylined would be greater than in all other corridors. Fig. 3-6, p. 3-27, illustrates recreation use by corridor within Elko County. The graph shows that more recreation would be affected by transmission line construction in the O'Neil Basin Corridor than in the Highway,



Adobe, and Metropolis Corridors. (Information on recreation use was obtained from the Recreation and Water Needs Unit Resource Analysis, Elko BLM District Office.)

FIG. 3-6 IMPACTS ON  
RECREATIONAL USE



ROADLESS AREAS AND AREAS  
OF ENVIRONMENTAL CONCERN

Allowance of a transmission right-of-way with the associated construction activities may preclude further consideration of the identified roadless areas for their wilderness values. Section 603(c) of the Federal Land Policy and Management Act of 1976 directs that these areas shall be managed in a manner so as not to impair the suitability of such areas for preservation as wilderness, and further, that the Secretary of the Interior shall take any action required to prevent unnecessary or undue degradation of the lands and their resources or to afford environmental protection.

As shown on the Recreation Activities Map, p. 2-55, the corridors considered in this statement could affect, either directly or indirectly, the following numbers of roadless areas:



	<u>Direct Impact</u>	<u>Indirect Impact (Visual)</u>
--	----------------------	---------------------------------

O'Neil Basin Corridor	13	3
Highway Corridor	6	4
Adobe Range Corridor	7	5
Metropolis Corridor	7	5

Other than the impacts to the environment, which are discussed elsewhere in this chapter, the primary impacts to the concept of wilderness within the identified roadless areas would be the physical presence of the construction access roads and the transmission line itself. If the project is built, all or part of 10 to as many as 18 identified roadless areas (depending on the corridor selected) could be rendered unsuitable for further consideration as wilderness study areas.

Identified areas of environmental concern direct special management attention to protect and prevent damage to important historic, cultural, or scenic values, critical fish and wildlife resources or other natural systems. The important or critical-value resources are discussed separately in the appropriate section of this chapter.

## ECONOMIC & SOCIAL CHARACTERISTICS

An economic profile of current and probable future activity in Sierra Pacific's service area, Elko County and the two affected Idaho Counties, has been presented in Chapter 2. Against that base this section will attempt to indicate the possible impacts resulting from: (a) increased energy availability, and (b) construction of a 345 kv transmission line.

### POPULATION

The impacts of continuous and reliable energy availability as an inducement to population growth vs. energy as a constraint to growth are quantitatively difficult to measure in a direct cause-and-effect relationship. However, average annual growth rates in energy requirements (10.4 percent in Sierra Pacific's service area and 10.5 percent in the Elko area), and population growth rates are interrelated (see Table H-2, p.10-61). This relationship is further illustrated by Figures H-3, H-4, H-5, and H-6, pp. 10-66 and 10-69, which indicate that electrical energy growth patterns are tied to employment/income and population growth indices (see also Chapter 2, Economics, p.2-54).

Continuous and reliable electrical energy (as a facilitator of social and economic growth) would provide the impetus of moving the Reno-Sparks area toward its population growth potential as based on an estimate of the total population which the natural resources of the cities (Reno-Sparks) and county (Washoe) would support on a continuing basis without unreasonable impairment.



Based upon available information (Regional Planning Commission, Reno, Sparks, and Washoe County, A Conservation/Population Plan, June 1975), the proposed plan suggests these total estimates to be:

Washoe County	-	618,000 persons
City of Reno	-	175,000 persons
City of Sparks	-	55,000 persons

(Washoe County figures include Reno and Sparks)

In sum, Washoe County's population and conservation plan proposed an estimated 230,000 persons in Reno and Sparks and the remaining population in the unincorporated areas of the county. Population projections (see Chapter 2, Economics, p.2-54) estimate that this population will be reached by the year 2000.

An interesting note concerning growth within Washoe County, specifically the Reno-Sparks area, is that the applicant (Sierra Pacific Power Company) is also the major purveyor of water within Washoe County. Sierra Pacific supplies recreational, residential, municipal, commercial, industrial, and some agricultural water to those portions of the county lying within Reno and Sparks and within its "water service area." Sierra Pacific operates on a certificated basis in both cities and is not required to supply water to all parts of the cities. At this time, the company maintains that it does not intend to expand the boundaries of its water service area. This intent has the effect of constraining growth within Washoe County while the effect of the supply of reliable and continuous electrical power availability creates a favorable environment in which social and economic growth can thrive. This existing dichotomy places Sierra Pacific Power Company in the position of facilitating and inhibiting growth at the same time in an area that constitutes 78 percent of its total energy demand.

#### EMPLOYMENT/INCOME

The impact of constructing the transmission line is expected to be temporary, based on the short-term introduction of the working force into the local economic profile. Due to the nature of transmission line construction, it is expected that the bulk of the salary income would not remain in the communities along the transmission route because the majority of the labor force is to be from out of the study area (out-of-state).

Depending on time constraints (Table 3-6, p.3-30), the total working force can vary significantly. However, a normal size crew is approximately 40 men with an estimated total average monthly income of \$96,000. As Table 3-7, p.3-31 indicated, it would be the time needed for construction and size of crew that determines salary income impacts on local communities. An ex-



ample of the interrelationship of these two tables in determining employment/income effects is as follows: Table 3-7 indicates that the Valmy/state line segment of the O'Neil Basin Corridor is approximately 154 miles in length with an estimated 10-month construction time. Taking the estimated average salary from Table 3-6, it can be seen that a 10-month construction time accomplished by a 40-man crew will earn \$960,000 (gross income). Going back to Table 3-7, we see that the affected local communities are Battle Mountain, Elko, Wells, and Jackpot, Nevada. Although this is only one example of a 40-man crew working for 10 months on a specific transmission line segment, it does provide the procedure in estimating employment/income effects of transmission line construction to local communities.

TABLE 3-6  
ESTIMATED AVERAGE MONTHLY SALARY OF THREE  
VARIABLE SIZE TRANSMISSION LINE CREWS 1/  
(\$000)

Month	20 Man Crew	40 Man Crew	80 Man Crew <u>2/</u>
1	\$48,000	\$96,000	\$192,000
2	96,000	192,000	384,000
3	144,000	288,000	576,000
4	192,000	384,000	768,000
5	240,000	480,000	960,000
6	288,000	576,000	1,152,000
7	336,000	672,000	1,344,000
8	384,000	768,000	1,536,000
9	432,000	864,000	1,728,000
10	480,000	960,000	1,920,000
11	528,000	1,056,000	2,112,000
12	576,000	1,152,000	2,304,000

1/ Wage rate estimated at \$15.00 per hour per man.

2/ 80-man crew reflects accelerated schedule and would be utilized to shorten construction time.

The above estimate concerns a standard size crew (40 men) constructing approximately 16 miles of transmission line per month (Table 3-7, (2), p.3-31), however, it does not take into account the possibility of an accelerated schedule which fields a larger crew over the entire route in order to shorten construction time. Given the time constraints imposed by the ES process, the applicant estimates a 12 month construction schedule which would move the delivery date (Hunt substation hookup) to March 1978. If the



transmission line is constructed exclusively by ground operations within the 12 month schedule, then it can be estimated from Table 3-7 (16 miles per month) that 80 men (two crews of 40 men) would be required. Utilizing Table 3-6 it can also be estimated that the gross salary/income for 80 men working for 10-12 months is approximately 2 million dollars.

**TABLE 3-7**  
**TRANSMISSION LINE CORRIDOR BY SEGMENT/TOWNS AND**  
**ESTIMATED TIME NEEDED FOR CONSTRUCTION 1/**

Segment/ Towns	O'Neil Basin (Miles)	Const. 2/ Time (Months)	Highway (Miles)	Const. Time (Months)	Adobe (Miles)	Const. Time (Months)	Metropolis (Miles)	Const. Time (Months)
Oreana/ Valmy Winnemucca	73.5	4.6	103	6.4	73.5	4.6	73.5	4.6
Valmy/ Stateline Btle. Mtn. Elko Wells Jackpot	153.5	9.5	197	12.3	181.5	11.3	188.5	11.8
Stateline/ Hunt-10. Jackpot Rogerson Hollister Hanson Eden/ Hazelton	59	3.7	60	3.7	60	3.7	60	3.7
TOTAL	286	17.8	360	22.4	315	19.6	322	20.1

1/ See map - delineating transmission line corridors and segments.

2/ Estimates of construction time based on average of the following; (a) 120 miles in 17 months on the Austin to Yerington area segment Intertie #1, (b) accepted bid of 90 miles in 7 months on the Tracy to Oreana segment of Intertie #2, (c) Sierra Pacific estimate of 28 miles per month utilizing a 40-man crew. Average of these three examples = 16 miles per month. Variances in estimates due to (1) time constraints; (2) size of crew; (3) topography.

To delineate the monetary impacts to the local communities adjacent to the proposed corridors, a number of explanatory factors must be illustrated.

Disposable income - the total actual spendable income available to construction crews has been estimated by using a 30 percent overall deduction for taxes, pension plans, health care, etc., thus leaving a total of 1.4 million dollars as spendable income.

Social/cultural characteristics of the construction crew - the prime contractor for the Tracy-Oreana segment of the transmission line has characterized the construction workers (called "boomers") as primarily single and highly mobile. (Most boomers travel the entire nation following extra-high voltage construction projects.) It is estimated that 90+ percent of the construction workers travel in some sort of self-contained vehicle such as a camper or trailer or motor home; thus, when on the job they carry their own accommodations.



Based on the social/cultural nature of the "boomers" it is estimated that they would spend approximately 50 percent of their disposable income, amounting to \$700,000.

The characteristics of the communities adjacent to the proposed corridors are primarily those of a tourist-service orientation dependent on the interstate tourist traffic and gaming activities. As a result, these communities have more than adequate health, police, and other infrastructure services to meet the needs of both the resident and potential transient populations.

From the preceding discussion it can be seen that positive monetary impacts to the communities adjacent to the corridors would be a one-time infusion into the local economy without multiplier effects. In summation, it can be estimated that during a 10-12 month construction period 80 construction workers would leave around \$700,000 in the various communities in incremental amounts. Given the length of construction time, the mobility and social characteristics of the "boomers" and the number of tourist-oriented communities involved, minimum impacts to the infrastructures are expected.

#### PUBLIC TAX BASE

Property taxes on transmission lines would be the primary tax benefit to the governments through whose jurisdiction to transmission line passes. (See Table H-4, p.10-63.) Tax assessments are set by law at a certain percentage of cash value. In Nevada this is 35 percent and a variable rate in Idaho. The county tax rate is then applied to that percentage of the value. In the affected counties, this potential tax benefit can be estimated as shown on Table 3-8, p.3-33.

In all counties, the addition to the tax base would be beneficial. As Table 3-8 indicates, Elko County's added tax revenue would be substantially higher in all corridors due to the fact that Elko County is common to all corridors and contains the greatest percentage of line miles.

#### HOUSING

The social impacts created by the construction work force on the affected communities are short-term and are not expected to generate adverse impacts. Although the size of the construction work force can vary widely depending on time constraints, the communities located along the various corridor routings are primarily tourist-oriented (See Chapter 2, Economics, p.2-54), and fully capable of accommodating a temporary increase in transient population. This estimation is based on currently available motel units, and through personal contact with service sector



personnel in the affected communities. The towns in question have adequate facilities to provide basic health, police, and other community services for the resident population as well as experiencing the seasonal demands of a tourist population. Due to the transient nature of the working force, and the fact that few, if any, of the construction workers would bring school-age children into the area, no impact is expected on local schools.

TABLE 3-8  
ESTIMATED TAX SITUATION BY CORRIDOR AND COUNTY  
NEVADA-IDAHO

Corridor & County	Line Miles	Estimated <sup>1/</sup> Assessed Valuation \$	Added Tax <sup>2/</sup> Revenue to County
<u>O'Neil Basin</u>			
Pershing	54	1,350,000	40,905
Humboldt	27	675,000	22,140
Lander	17	425,000	15,172
Elko	129	3,258,000	91,549
Twin Falls	54	490,050	17,592
Jerome	5	46,750	822
TOTAL	286	\$6,244,800	\$188,180
<u>Highway</u>			
Pershing	47	1,175,000	35,602
Humboldt	65	1,625,000	53,300
Lander	26	650,000	23,205
Eureka	25	625,000	20,187
Elko	137	3,425,000	96,242
Twin Falls	55	499,125	17,918
Jerome	5	46,750	822
TOTAL	360	\$8,045,875	\$247,276
<u>Adobe Range</u>			
Pershing	54	1,350,000	40,905
Humboldt	28	700,000	22,960
Lander	27	675,000	24,097
Eureka	25	625,000	20,187
Elko	121	3,025,000	85,002
Twin Falls	55	499,125	17,918
Jerome	5	46,750	822
TOTAL	315	\$6,920,875	\$211,891
<u>Metropolis</u>			
Pershing	54	1,350,000	40,905
Humboldt	28	700,000	22,960
Lander	26	650,000	23,205
Eureka	25	625,000	20,187
Elko	129	3,258,000	91,549
Twin Falls	55	499,125	17,918
Jerome	5	46,750	822
TOTAL	322	\$7,128,875	\$217,546

<sup>1/</sup> Assessed valuation based on a estimated 1977-78 situation of \$25,000 per line mile for the State of Nevada.

<sup>2/</sup> Added tax revenue estimated by utilizing Local Government Red Book Ad Valorem Tax Rate for Fiscal Year 1975-76 by County x Assessed valuation of \$25,000 per line mile.



## PLANNING AND ZONING

### FEDERAL

At the present time the only known conflict regarding the construction of the proposed transmission line is a recommended planning decision found in the Burley, Idaho, BLM District Management Framework Plan (MFP). This recommendation concerns routing any new transmission lines along an existing 138 kv corridor as established by Idaho Power Company. The applicant's proposed route (O'Neil Basin Corridor) follows the Burley District's recommended route only in part on its way to Hunt, Idaho (see the Study Area Map, p.1-5). The other three corridors, in the state line-to-Hunt segment, conform to Burley's MFP recommended route.

### STATE

In a letter from the Nevada State Clearinghouse, dated January 30, 1976, it was stated that it was a Nevada State policy that transmission lines should be consolidated into existing corridors. At the present time the only corridor that conforms to this routing criterion is the Highway Corridor. It was also stated by the Clearinghouse that new corridors should be designed with the thought of expansion to accommodate additional transmission lines at a future date.

### COUNTIES AND LOCAL GOVERNMENT

See p.2-66 for Washoe County's recommended conservation and population plan.

## ATTITUDES AND EXPECTATIONS

Local - A recently completed Nevada Highway Department Community Social Attitudes Survey (4-76) has revealed information that seems to indicate that urban area residents within Sierra Pacific's service area would prefer a "no growth" policy. The inherent conflict in this attitude is that the availability of continuous and reliable energy, as an expectation taken for granted, facilitates an environment in which growth could take place. Rural residents seem to lack these conflicting attitudes, a fact that has been well illustrated by the extremely small turnouts at public meetings conducted by the applicant in the various rural communities in northern and northeast Nevada.

Regional - At the present time there is no documentation of any regional attitudes or expectations of powerline development.

National - Same as the regional description.



## CORRIDOR CONSTRUCTION COSTS

Discussion of the effect or impact of constructing a transmission line on the social and economic fabric within Sierra Pacific's primary load center and on the communities and counties along the various transmission line routes would not be complete without discussing the impact of the cost of constructing such a project. Since Sierra Pacific Power Company is a utility, most costs incurred are "pass on" costs to its customers. Although the impacts of the line would be wide spread, it is Sierra's customers within its service supply area that would incur the bulk of the cost of construction of the proposed 345 kv transmission line and substation. Table 3-9, below, delineates these construction costs (see also, Table H-4, p.10-63). Total added per customer costs can be calculated based on amortization techniques. In this way a more realistic look at "pass on" costs can be presented. For the four corridors, per customer cost are:

<u>Corridor</u>	<u>Total Added Yearly Cost Per Customer</u>
O'Neil Basin -	\$31.00
Highway -	36.00
Adobe Range -	32.00
Metropolis -	33.00

Amortization calculations are based on 116,000 Sierra Pacific customers; 50-year life of project; 11.5 percent interest cost on borrowed capital.

**TABLE 3-9**  
**CORRIDOR COMPARISON OF CONSTRUCTION COSTS; PRIVATE**  
**LAND NEEDED FOR RIGHT-OF-WAY, AND ESTIMATED ADDED**  
**TAX REVENUES**

Corridor	Total Line Miles	Cost of 1/ Construction Millions \$	Easement Require- ment needed from Private Land as % of Total Line Miles	Total Esti- 2/ mated Added Tax Revenues to Counties
O'Neil Basin	286	31.5	33%	188,180
Highway	360	36.7	52%	247,276
Adobe Range	315	32.8	51%	211,891
Metropolis	322	33.2	48%	217,546

1/ Cost of construction calculated from figures submitted by Sierra Pacific Company: \$90,700 per mile in flat terrain, \$105,000 per mile in rugged terrain. See Appendix H Table H-5 indicating by county by corridor estimates of construction costs. Substation costs were added to each corridor because of common segments. Substation costs: 3.5 million. Valmy (new) Hunt (addition).

2/ Estimated tax revenues based on a 1977-78 assessed valuation of \$25,000 per line mile x appropriate county tax rate. See Table 3-8 delineating estimated tax revenues by individual counties within corridors.



These figures indicate that each customer within Sierra Pacific's service area would incur an added yearly cost between \$31 to \$36 each year for 50 years depending on which corridor is selected. In reality the cost difference between corridors would be relatively insignificant on a per customer basis because: (1) with the addition of more Sierra Pacific customers the added yearly cost increase per customer would decrease, as there would be more customers to pay off a fixed rate; (2) inflation would dampen the effect of current debts over time; and (3) positive real disposable income changes would decrease the impact of fixed debts.

## VISUAL RESOURCE

### INTRODUCTION

Impacts on the visual resource associated with transmission line construction involve land form alteration, vegetation removal, and the introduction of tower structures and their associated components as intrusions on the natural scenery. By comparing the degree of contrast of these proposed activities in each corridor to the existing landscape character and to the quality of the visual resource, the degree of visual impact was assessed. This procedure, the Visual Contrast Rating System, was applied to determine the amount and the degree of visual impact on the proposed and alternative routes. It is suggested that the reader refer to Appendix J, p.10-71, for familiarization with the visual contrast rating process.

Areas that had potential for the highest visual contrast (the foreground zones where the proposed or alternative routes would be viewed from key observer positions, generally located along the present paved transportation system within the study area) were delineated. Each of these areas were then rated, using the contrast rating system to determine the level of visual impact that would be created due to the introduction of a power transmission line and associated construction.

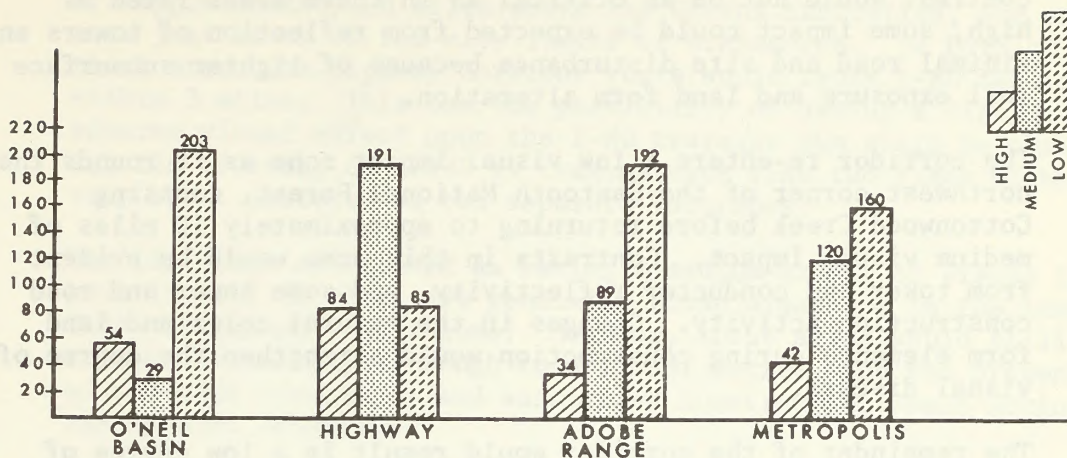
Figure 3-7, p. 3-37, represents the number of miles of each corridor traversing the three levels of visual impact: high, medium, and low. (These areas are also shown on the Visual Impacts Map, p. 3-41.)

### O'NEIL BASIN CORRIDOR

The first 10 miles of corridor from the Oreana substation through Sacramento Canyon would result in a high degree of visual impact. This is due primarily to the amount of contrast created by exposure of lighter-colored subsurface soils and landform alterations associated with road construction and tower site leveling. Shiny aluminum towers and other reflective hardware would also add to the high amount of visual contrast.



FIGURE 3-7 DEGREE OF VISUAL IMPACT



For approximately the next 50 miles the corridor is in a low visual impact area as it traverses Buena Vista Valley, the lower elevations of the East Range, and Pleasant Valley.

The corridor enters another high impact area as it crosses I-80 and the Southern Pacific and Western Pacific Railroads between Golconda and Battle Mountain. The contrast associated with this area exists primarily due to reflection of towers and conductors. Contrast as a result of road access and tower site leveling would be at a minimum in this area due to the relative flatness of the area.

For the following 60 miles, the corridor enters another low visual impact zone until it enters two sectors of high visual impact, each approximately 10 miles in length, crossing State Routes 11 and 51 to the south and east of the Humboldt National Forest. A 345 kv transmission line constructed in these two sections would result in very noticeable intrusion due to land alteration (from road and tower site construction), silhouetting of towers on the horizon line, and the reflective qualities of aluminum towers during certain times of the day. Vegetation removal would also create a noticeable degree of visual contrast because of changes in the elements of color and form. The next 65 miles returns to a low visual impact zone until the corridor crosses State Route 93. Impacts associated with this crossing would be similar to those mentioned in the crossing of I-80; reflection of aluminum towers and conductors during certain times of the day and the opportunity for the actual transmission line to be viewed from Highway 51. Some contrast due to vegetation removal, roads, and tower site construction would also add to the high degree of visual impact in this area.



For the following 19 miles, the corridor enters an area of medium visual impact. Although the degree of visual disturbance due to contrast would not be as critical as in those areas rated as high, some impact could be expected from reflection of towers and minimal road and site disturbance because of lighter subsurface soil exposure and land form alteration.

The corridor re-enters a low visual impact zone as it rounds the northwest corner of the Sawtooth National Forest, crossing Cottonwood Creek before returning to approximately 10 miles of medium visual impact. Contrasts in this area would be evident from tower and conductor reflectivity, and some tower and road construction activity. Changes in the natural color and land form elements during construction would strengthen the degree of visual discord.

The remainder of the corridor would result in a low degree of visual impact except for approximately 4 miles associated with the crossing of the Snake River Canyon. A transmission line across this scenic canyon would create a high degree of contrast to the existing rugged landscape character regardless of where the impacts may be viewed from: outside of the canyon looking in, or inside the canyon looking up and out. These impacts are generally related to the towers and conductors rather than to road access and tower site development. The resultant tower location and conductor stretched across the canyon would create a high degree of visual disharmony due to the introduction of man-made forms and colors which would not blend into the natural features of the environment.

#### HIGHWAY CORRIDOR

As shown in Table 3-10, p.3-52, the strongest degree of cumulative visual impact would occur in this corridor. The basic reason for this is that it practically parallels I-80 and State Route 93 for its entirety and crosses major transportation routes 11 times between the Oreana and Hunt substations. The 84 miles designated as having a high degree of contrast are generally those associated with the crossing of the roadways and areas that have a high visual value where the corridor would be located in the immediate foreground zone. Most impacts in this corridor would result from the introduction of unnatural-appearing structures--the towers and conductors--and their color and reflective properties. Some road development along the corridor and individual tower sites would likewise create noticeable contrast. This would be most obvious in areas of steeper topography where road cuts and fills and tower site leveling would be necessary and in most cases noticeable.



Two areas where the Highway Corridor would cause significant visual impacts are: a location associated with the Mill City turn-off approximately 30 miles above the Oreana substation, and an area just north of the city limits of Winnemucca. In both of these areas the Highway Corridor route would cross I-80 two times within 3 miles. This has the possibility of having a significant adverse visual effect upon the I-80 traveler who would be observing the crossing of a 230 kv transmission line two times within a very short distance in two separate locations.

The 191 miles designated as having a medium amount of visual impact in this corridor are generally those areas not in the immediate foreground visual zone. However, these areas would still attract attention, although to a lesser degree, and the presence of man-made structures and associated construction would dominate the natural landscape.

#### ADOBE RANGE CORRIDOR

In terms of degree of overall adverse visual impact, the Adobe Range Corridor would have the least amount in comparison with the other corridors, with only 34 miles rated as high. All sections of the Adobe Corridor have been discussed in either the O'Neil Basin Corridor or Highway Corridor sections with the exception of an area approximately 12 miles in length to the east of Swales Mountain and crossing State Route 51, and a few miles prior to tying back into the Highway Corridor along State Route 93. Both of these areas are rated as having a medium degree of impact if a power transmission line were located there. This is due to the contrast of the towers with the natural character of the area and, to a limited degree, to road construction. Some vegetation removal at the Highway 51 crossing would cause a noticeable impact on either side of the road for some distance.

#### METROPOLIS CORRIDOR

All 42 miles of high visual impact that would occur in this corridor have been addressed in the other corridor discussions. The only area unique to this corridor is a section approximately 30 miles in length between the Highway and Adobe Corridors. In this area 15 miles have been rated as having a medium degree of visual impact as the line would cross Highway 51 and several miles of the Ruby Valley. Visual impacts would result from the introduction of man-made materials and colors that would cause noticeable, although not severe, contrast to the existing landscape character. Some contrast due to soil manipulation associated with access roads and tower sites would also be evident in this location.



## HISTORICAL / ARCHEOLOGICAL VALUES

### DIRECT IMPACTS UPON HISTORICAL/ARCHEOLOGICAL VALUES

Wherever construction activity occurs, the potential for damage to archeological sites and artifacts exists. Historical/archeological sites would be subject to partial or complete destruction by these construction activities.

### INDIRECT IMPACTS UPON HISTORICAL/ARCHEOLOGICAL VALUES

#### COLLECTORS

Crews may collect cultural material along the corridor during ground survey, tower construction, line stringing, inspection, and maintenance operations.

When construction requires the opening of new roads or "jeep trails" in previously inaccessible country, increased human traffic is inevitable. Collectors in Nevada are known to partially or totally destroy surface archeological sites when access to the sites by off-road vehicles is made easier.

#### AESTHETICS

The total transmission line (towers, conductors, and wires) may be an impact in certain locations, due to an introduction of "visual, audible, or atmospheric elements that are out of character" with the historical/archeological setting. (See 36 CFR 800.9 (c).)

### HISTORICAL/ARCHEOLOGICAL IMPACTS - O'NEIL BASIN CORRIDOR

#### HUMBOLDT RANGE

Direct impacts to cultural values may result in Sacramento Canyon, located in the Humboldt Range, if strategic placement of construction activities is not practiced. The mere presence of the transmission line results in a secondary impact, as it would tend to be out of character with the historical/archeological setting.

#### UNSURVEYED 27-MILE SEGMENT

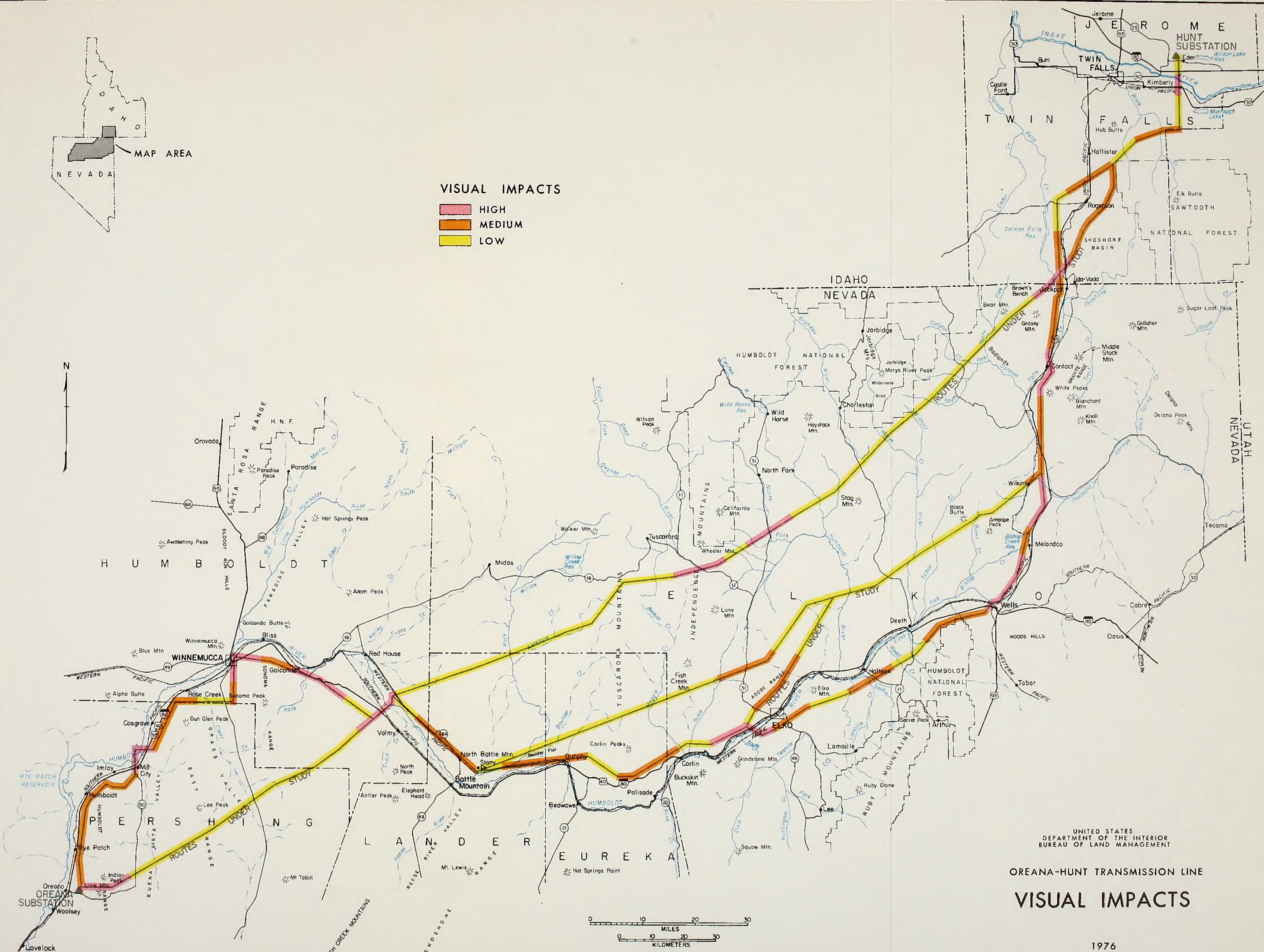
Direct and indirect impacts upon the unknown cultural material in this unsurveyed portion would be expected due to line construction (see the Cultural Resources Map, p.2-77).





VISUAL IMPACTS

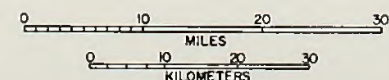
- HIGH
- MEDIUM
- LOW



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

OREANA-HUNT TRANSMISSION LINE

VISUAL IMPACTS









## HISTORICAL/ARCHEOLOGICAL IMPACTS - ADOBE AND METROPOLIS CORRIDORS

Direct and indirect impact to a possible 150-plus sites would be expected if either the Adobe or Metropolis Corridors were selected for the transmission line right-of-way.

## HISTORICAL/ARCHEOLOGICAL IMPACTS - HIGHWAY CORRIDOR

The Highway Corridor would be expected to have the highest direct and indirect impact upon the historical/archeological values, due to the much greater probability of cultural material being located in proximity to the Humboldt River.

## ACCIDENTS & CATASTROPHES

All four corridors have similar public safety impacts. Transmission lines are hazardous because they transmit electrical power at high voltages. The lines are designed to meet standards set by the National Electric Safety Code, established to reduce safety hazards to an acceptable level.

Potential hazards resulting from the use of construction vehicles and equipment include: traffic hazards on public roads in construction areas and the possibility of starting rangeland fires. Flammable liquids and potentially dangerous equipment and materials would be stored in the storage yards.

If the transmission line is constructed, there would be numerous potential hazards to the integrity of the line and to public safety - i.e., earthquakes, floods, lightning, and line damage resulting from aircraft that may fly too low.

All four corridors would be equally vulnerable to earthquake damage. The corridors would pass through seismic zone 3 (possible major earthquake damage) in western Nevada and through seismic zone 2 (possible moderate damage) in northeastern Nevada and southern Idaho. The demarcation line between the two zones passes north-northwest through the Battle Mountain area. (See Seismic Risk Map, p. 2-11.) Tower damage and line disruption could result from major earthquakes and shifts along fault lines in the immediate vicinity of the transmission line. The adverse impacts would be: (1) widespread temporary power outages in homes, businesses, and industry, or (2) other transmission lines in the service area having an increased load while the damaged line was being repaired.

Flood potential exists along all four corridors. Many small streams may flood during or after thunderstorms and as a result of spring snowmelt. Floods great enough to erode soils around



a transmission tower anchor and guy wires, causing the tower to topple, would be unusual, but could occur in alluvial areas near the Humboldt River unless towers are designed to withstand this possibility. The Metropolis and Highway Corridors between Stony Point (near Battle Mountain) and Dunphy would be susceptible to flooding. Tower failure would disrupt service until repairs could be completed. The electric current would automatically be shut off should any flood damage occur to the line.

Lightning strikes on the transmission line during storms would be a hazard to humans or animals if they came in contact with, or were near the tower or guy wires at the precise moment and location of a strike.

The Federal Aviation Administration (FAA) has regulatory authority over the height of transmission towers close to airports. If the towers are 200 feet or higher above ground or water level at any location, a "Notice of Construction" must be filed with the FAA. None of the towers for the proposed line would reach that height. The line could be a hazard, however, to any pilot who fails to observe FAA regulations on low-altitude flying, or to crop dusters near the agricultural areas.

The transmission line would pose an "impact" hazard (flying into the powerline) to raptors and waterfowl in specific areas. Raptors may use the towers for perches and have been known to nest on the tower structures. Because of the wide separation of the phase lines, there is little probability of electrocution of raptors. The transmission line poses little threat to human safety from electrocution.

Noise levels from transmission line corona effects would be negligible. Anyone located beyond 800 feet from the line would not be impacted by audible noise or radio or television interference, even under the most adverse weather conditions. FM reception would not be impacted by the line even within the right-of-way. (Final Environmental Report: North Valmy Station. Westinghouse Corp., 1976.)

## ECOLOGICAL INTERRELATIONSHIPS

The significant impacts caused by transmission line construction and operation on some key ecological interrelationships will be discussed in conjunction with the four matrices which have been developed. One matrix was developed for each of the four corridors: O'Neil Basin, Highway, Adobe Range, and Metropolis (see Figure 3-8, p. 3-45). Each matrix consists of two identical axes containing 11 major headings, forming columns and rows. At the intersection between any given column and row, it is shown whether an adverse impact, a beneficial impact, or no impact



# IMPACTS ON ECOLOGICAL INTERRELATIONSHIPS

## O'NEIL

	CLIMATE/ AIR QUALITY	GEOLOGY	SOIL	HYDROLOGY	VEGETATION	WILDLIFE	LAND USE	SOCIO-ECONOMICS	RECREATION	CULTURAL	VISUAL
CLIMATE/ AIR QUALITY	-M	O	-H	O	O	O	O	O	-M	O	-M
GEOLOGY		O	O	O	O	O	O	O	-M	O	-H
SOIL			-H	-M	-H	-M	-S	O	-S	O	-H
HYDROLOGY				O	O	-M	-S	+M	-M	O	-M
VEGETATION					-H	-H	±	O	-S	O	-H
WILDLIFE						±	±	±	±	O	O
LAND USE							+S	+H	±	O	-S
SOCIO-ECONOMICS								+H	±	-S	±
RECREATION									-H	±	±
CULTURAL										O	±
VISUAL											O

## HIGHWAY

	CLIMATE/ AIR QUALITY	GEOLOGY	SOIL	HYDROLOGY	VEGETATION	WILDLIFE	LAND USE	SOCIO-ECONOMICS	RECREATION	CULTURAL	VISUAL
CLIMATE/ AIR QUALITY	-S	O	-H	O	O	O	O	-M	-S	O	O
GEOLOGY		O	O	O	O	O	O	O	O	O	-M
SOIL			-H	-M	-M	-S	-M	O	O	O	-M
HYDROLOGY				O	O	-S	-S	+M	-M	O	-S
VEGETATION					-H	-M	±	O	O	O	-M
WILDLIFE						±	±	±	±	O	O
LAND USE							+S	+H	±	O	-M
SOCIO-ECONOMICS								+H	±	-H	±
RECREATION									-S	±	±
CULTURAL										O	±
VISUAL											O

## ADOBE

	CLIMATE/ AIR QUALITY	GEOLOGY	SOIL	HYDROLOGY	VEGETATION	WILDLIFE	LAND USE	SOCIO-ECONOMICS	RECREATION	CULTURAL	VISUAL
CLIMATE/ AIR QUALITY	-S	O	-H	O	O	O	O	-S	-M	O	-S
GEOLOGY		O	O	O	O	O	O	O	-S	O	-M
SOIL			-H	-M	-H	-S	-S	O	-S	O	-H
HYDROLOGY				O	O	-M	-S	+M	-S	O	-S
VEGETATION					-H	-H	±	O	O	O	-H
WILDLIFE						±	±	±	±	O	O
LAND USE							+S	+H	±	O	-M
SOCIO-ECONOMICS								+H	±	-S	±
RECREATION									-M	±	±
CULTURAL										O	±
VISUAL											O

## METROPOLIS

	CLIMATE/ AIR QUALITY	GEOLOGY	SOIL	HYDROLOGY	VEGETATION	WILDLIFE	LAND USE	SOCIO-ECONOMICS	RECREATION	CULTURAL	VISUAL
CLIMATE/ AIR QUALITY	-S	O	-H	O	O	O	O	-M	-S	O	-S
GEOLOGY		O	O	O	O	O	O	O	-S	O	-M
SOIL			-H	-M	-H	-S	-M	O	-S	O	-H
HYDROLOGY				O	O	-S	-S	+M	-S	O	-S
VEGETATION					-H	-H	±	O	O	O	-H
WILDLIFE						±	±	±	±	O	O
LAND USE							+S	+H	±	O	-M
SOCIO-ECONOMICS								+H	±	-S	±
RECREATION									-M	±	±
CULTURAL										O	±
VISUAL											O

-H HIGHLY ADVERSE  
 -M MODERATELY ADVERSE  
 -S SLIGHTLY ADVERSE  
 O NO IMPACT

+H HIGHLY BENEFICIAL  
 +M MODERATELY BENEFICIAL  
 +S SLIGHTLY BENEFICIAL  
 ± ADVERSE & BENEFICIAL

FIG. 3-8



would result on the selected ecological interrelationship from line construction or operation. A relative significance is attached to each impact; a highly adverse impact is indicated by a -H, a moderately adverse impact by a -M, and a slightly adverse impact by a -L. Beneficial impacts are indicated by corresponding positive letters. When both adverse and beneficial impacts would occur, a + is shown (for simplicity, these were not quantified). Zero indicates little or no impact. A high impact on one interrelationship has not been ranked in importance relative to a high impact on another interrelationship because a subjective judgment largely dependent on personal perspective would be required.

The various components which comprise the 11 major headings were not separately listed so that the matrices would be of manageable size. (See the Key Ecological Interrelationships Matrix, Figure 2-6, p. 2-80, for a listing of the separate components.) Each of the components under a given heading was considered when analyzing the level of impacts under that heading for the matrices in Chapter 3. In cases where the components of a major heading interact with each other, the heading is shown as being interrelated with itself (example: soil vs. soil when relating soil fertility to soil erosion). Both direct impacts (due to line construction) and indirect impacts (due to greater power availability from line operation) have been analyzed in conjunction with their magnitude, duration, intensity, and incidence. The discussion of the adverse and beneficial impacts is meant to highlight the more important and severe impacts.

The matrices are two-dimensional in that they show the level of impact on the relationship between only two headings at a time. The matrices can be used to show the multi-dimensional web-like nature of the impacts by relating the impacts under several different headings.

The following example will illustrate how to use the matrices. The soil vs. climate/air quality interrelationship was judged to be a highly adverse impact on all four corridors for two main reasons: (1) the use of construction vehicles and equipment would disturb the structure of the soil surfaces making them more susceptible to erosion; and (2) the new construction access roads would allow an increase in vehicular traffic. This soil disturbance, combined with the high winds common to the study area, would add significantly to the fugitive dust problem within the corridors. This impact on soil/air quality would be of high intensity during construction, and would continue over the long-term, due to vehicular traffic over new roads. This impact would, however, be concentrated along the right-of-way and in construction access road areas.



The following discussion of some of the more important impacts will be multi-dimensional and focused on cause-and-effect relationships. Impacts on three major spheres will be analyzed: (1) the human environment, (2) the biological communities (excluding man), and (3) the physical environment.

The proposed transmission line construction would cause soil disturbance in the storage yards, on the construction access roads, and along the right-of-way. The effects would be: (1) some stream sedimentation and greater erosion caused by overland flow (see soil vs. hydrology, a moderately adverse impact within all corridors), (2) greater wind erosion, (3) uprooting of some vegetation (soil vs. vegetation, a highly adverse impact in all corridors except the Highway, where it would be a moderately adverse impact), (4) a reduction in wildlife food and cover (vegetation vs. wildlife, a moderately adverse impact in the Highway Corridor, a highly adverse impact in the others), and (5) the human visual experience would be degraded by the soil and vegetative scars (soil vs. visual and vegetation vs. visual, both impacts are moderately adverse for the Highway and highly adverse for the other three corridors). The increased erosion and vegetative disturbance would be limited to the areas of soil disturbance. Stream sedimentation would occur downstream from disturbed areas. The increased erosion conditions could last for years, or until natural revegetation or re-seeding has been accomplished. Revegetation by native plant species would be exceedingly slow, if at all, because of the disturbance to the surface soil structure. Some of the more fertile soils presently capable of supporting plant life would become more susceptible to wind and water erosion (see soil vs. soil, referring to a highly adverse impact in the right-of-way and access road areas, regardless of corridor). The less fertile soils left behind may not be able to support vegetation as before. The removal of vegetation through soil disturbance would set back plant succession and allow undesirable invader species to become established. This impact (vegetation vs. vegetation) would be a highly adverse impact in all corridors. The low, erratic precipitation would make revegetation difficult in many disturbed areas. All of the above mentioned direct impacts, resulting from construction activities and use of new and existing access roads, are related to soil disturbance. These impacts are least in the Highway Corridor.

The operation of the proposed transmission line would have long-term beneficial impacts on social-economic and land use interrelationships. These impacts are related to additional power availability and not to line placement. With the exception of social-economics (the social well-being component) vs. air quality and cultural components, the impacts would be the same for the interrelationships between social-economics and the other headings in all corridors.



The additional power would have a population growth-inducing impact which would increase employment opportunities in the service industries and retail businesses. Since population in Sierra Pacific Power Company's service area is projected to increase, the impact of the line on the population/employment/social well-being interrelationship is judged to be highly beneficial.

Social-economics vs. land use is a highly beneficial impact, because putting the land to the highest and best use is a social-economic stimulant. Additional power would permit irrigation of new cropland, creating more income and employment and contributing to the social well-being of the agricultural and food processing sectors of the economy.

Secondary impacts which may result from irrigation of new cropland must be considered. Thirty thousand acres of undeveloped land between Lovelock and Battle Mountain, Nevada, could potentially become irrigated cropland if power is made available from transmission line construction (see Chapter 2 and 3, Land Uses, p. 2-37 and 3-16). Irrigation of these potential new croplands could result in a degradation of the quality of water flowing into Rye Patch Reservoir and ultimately into the Humboldt Sink. Development of an additional 30,000 acres of cropland would be incremental, due to the fact that national resource lands are interspersed with private lands and the suitable acreages are scattered over a large area.

For purposes of analyzing the secondary impacts on water quality, Humboldt Marsh vegetation, and aquatic habitats, the extreme case will be presented-that all 30,000 acres would be put into production in one year. The availability of additional electrical power would be a prime factor in the development of these acreages.

Any new croplands would be irrigated from the available groundwater supplies. Irrigation of these 30,000 acres is based on utilization of 50 percent of the perennial yield of any given groundwater reservoir (see Chapter 2, Land Uses, p.2-37). Therefore, it is estimated that no groundwater tables would be lowered due to these additional pumping loads.

The adverse impacts on water quality and associated biota would result from the leaching of salts and the surface runoff and leaching of herbicides and pesticides from the newly-irrigated lands into the irrigation return water flows. At this time, quantification of herbicide/pesticide impacts is not possible, since there would be numerous crops in rotation utilizing a variety of herbicides and pesticides.



The Humboldt Wildlife Management Area, located at the end of the Humboldt River system (the Humboldt Sink), is comprised of three marsh units: Toulon, Upper Humboldt Lake, and Lower Humboldt Lake. Water supply to the Humboldt Sink comes from the return flows from irrigated lands of Lovelock Valley, and limited flows from the Humboldt River. Water enters the marsh through the Humboldt River and from the Army and Toulon drains. As more lands are put under cultivation more saline water enters the marsh. Data on water quality and salt concentrations entering the marsh is limited. Salinity measurements in October 1973, yielded 2.5 tons per acre-foot of water entering the Toulon drain, 4.5 tons per acre-foot entering the Army drain, and 1.5 tons per acre-foot entering from the Humboldt River. An average of 9.5 tons of salts per acre-foot of return drainage flow can be anticipated from newly-irrigated croplands. (Humboldt River Upstream Storage Project, Vol. II, June 1974.)

For potatoes, the consumptive crop water requirement is estimated at a minimum of 2 acre-feet of water annually per acre of crop. ("Forecast for the Future-Agriculture", Report No. 8, Division of Water Resources, Nevada.) About 32 percent of the irrigation water used is ultimately returned to nearby surface waters. (EAR-Agricultural Development Program, Lower Snake River Plains of Idaho. Jan. 1976, p. III-31.)

30,000 acres X 2 acre-feet/acre = 60,000 acre-feet of water  
60,000 acre-feet X 32 percent return flow = 19,200 acre-feet  
of return flow

19,200 acre-feet of return flow at an average of 9.5 tons of salt per acre-foot of water = 182,400 tons of additional salts during the first year.

As the lands are irrigated year after year, and the salts are continuously leached into drainage ditches (which greatly reduces salts leaching into the water table), the salt concentrations would steadily diminish from the initial average of 9.5 tons per acre-foot to as low as 2.5 tons for older, established irrigated land. (Humboldt River Upstream Storage Project, Vol. II, June, 1974.) The return flows from 30,000 acres, widely dispersed between Lovelock and Battle Mountain (see the Agricultural Potential Map, p.2-38), would be divided between Toulon and Army drains and the point where the Humboldt River enters the marsh. Therefore, the salt concentrations would be different at each point, depending on the water volume at those points. Current data is not sufficient to determine accurately how quickly additional concentrations of salts would adversely affect marsh vegetative growth.



Salt concentrations of 6,000-9,000 ppm (8.5-13 tons per acre-foot) strongly inhibit growth of sego pondweed. Cattail growth is inhibited by salt concentrations of 4,900 ppm (7 tons per acre-foot). Alkali bulrush, the most salt-tolerant of the emergent vegetation, can grow well in concentrations up to 10 tons of salt per acre-foot; adult plants tolerate concentrations as high as 17-19 tons per acre-foot. Widgeon grass, the most abundant submergent plant, has the highest salt tolerance. High salt concentrations are unlikely to become a limiting factor in this plant's growth because concentrations greater than 9,000 ppm (13+ tons per acre-foot) are required by widgeon grass for good growth. Widgeon grass is an important duck and coot food source. Most of the marsh vegetation can tolerate higher salt concentrations if some water circulation is maintained in the marsh units.

The emergent vegetation can be temporarily flooded out when water levels rise due to additional water being released from Rye Patch Reservoir. Submergent vegetation is not affected by high water. Marsh habitat decreases in years of low water on the Humboldt River system, but the drying allows for soil aeration which stimulates plant growth when water levels again rise. Drying also keeps marsh vegetation from becoming over-abundant.

Irrigation of 30,000 additional acres from groundwater sources could contribute sizeable return flows to the lower Humboldt River system and may reduce the likelihood of low-water occurrences in the marsh units. As the newly irrigated lands are used and begin to leach a smaller concentration of salts, the additional return water flows would have a flushing effect on the marsh units greater than they would in the first year of development.

The recreational experience, as it relates to the other 10 headings, would be impacted by the presence of the transmission line. Only one of the interrelationships, recreation vs. recreation in the O'Neil Basin Corridor, is judged to be a highly adverse impact. The water-related and non-water-related sports enthusiasts would have their primitive experience lessened to a greater degree in this corridor than in the others due to the presence of the line. Recreation vs. recreation would have a moderately adverse impact in the Adobe Range and Metropolis Corridors and a slightly adverse impact in the Highway Corridor, where the primitive experience would be difficult to achieve under any circumstances. Another reason for this high-to-low spread on these impacts would be the degree of scenery impairment for the hunter, fisherman, or hiker out in the back country actively sightseeing. The O'Neil Basin Corridor has higher scenic qualities than the other corridors, so the presence of a transmission line and associated soil and vegetative scars would be a greater intrusion and cause more scenic quality impairment. The impacts on recreation, as related to all



of the other 10 headings, are greatest in the O'Neil Basin Corridor.

The impacts of transmission line presence on the interrelationship between the visual experience and the other 10 headings would be significant. As previously explained, soil and vegetative scars would degrade the visual experience. Transmission line towers and land scars crossing over scenic topographic features would reduce one's visual enjoyment of these features (see visual vs. geology). For the O'Neil Basin Corridor this would be a highly adverse impact because of the greater topographic relief. This impact would be moderately adverse for the other corridors. Changes in land use patterns, such as increased cultivation due to additional available power, would adversely impact the visual experience by changing small patches of land from the natural character of the surrounding terrain (see visual vs. land use). Since cultivation is not dependent upon line location, the impact would be the same for all corridors - moderately adverse. The impacts on the visual experience, as related to the 10 other headings, would be greatest in the O'Neil Basin Corridor and least in the Highway Corridor.

Both adverse and beneficial impacts would result in the interrelationship between cultural resources and recreation. Any new access roads needed for transmission line maintenance would allow more recreationists to view cultural sites and discover new ones (a beneficial impact). Opportunity for vandalism and other irresponsible acts on these sites would also increase with additional access (an adverse impact).



**TABLE 3-10**  
**SUMMARY OF MAJOR IMPACTS**

	Air Quality	Soils and Watershed	Vegetation	Wildlife	Social-Economic
O'Neil Basin Corridor	Dust production from construction activities and subsequent use of access roads. Ambient air quality already exceeds standards for particulates in many areas. Corona and vehicular emissions not a problem.	ROW corridor crosses 176 miles of soils groups having severe erosion hazard susceptibility. Construction activities will disturb approximately 843 acres.	41 mi.-salt-desert shrub 174 mi.-northern desert shrub 26 mi.-grassland 14 mi.-woodland 8 mi.-riparian 18 mi.-cropland(Idaho) 178 mi. of new roads mostly through northern desert shrub.	97 miles-critical big game range 21 aquatic habitats 45 sage grouse complexes 14 critical raptor areas 207 miles-upland game habitat	Additional electrical supply will facilitate population growth within the service area, especially Reno-Sparks.
Highway Corridor	Similar to O'Neil Basin Corridor.	ROW corridor crosses 112 miles of soils groups having severe erosion hazard susceptibility. Construction activities will disturb approximately 547 acres.	107 mi.-salt-desert shrub 187 mi.-northern desert shrub 20 mi.-grassland 2 mi.-woodland 26 mi.-riparian 18 mi.-cropland(Idaho) 14 mi. of new road mostly through northern desert shrub.	96 miles-critical big game range 22 aquatic habitats 18 sage grouse complexes 12 critical raptor areas 157 miles-upland game habitat	Same as above.
Adobe Corridor	Similar to O'Neil Basin Corridor.	ROW corridor crosses 129 miles of soils groups having severe erosion hazard susceptibility. Construction activities will disturb approximately 715 acres.	66 mi.-salt-desert shrub 187 mi.-northern desert shrub 27 mi.-grassland 10 mi.-woodland 5 mi.-riparian 18 mi.-cropland(Idaho) 109 mi. of new road mostly through northern desert shrub.	114 miles-critical big game range 13 aquatic habitats 12 sage grouse complexes 22 critical raptor areas 157 miles-upland game habitat	Same as above.
Metropolis Corridor	Similar to O'Neil Basin Corridor.	ROW corridor crosses 147 miles of soils groups having severe erosion hazard susceptibility. Construction activities will disturb approximately 641 acres.	66 mi.-salt-desert shrub 182 mi.-northern desert shrub 31 mi.-grassland 16 mi.-woodland 5 mi.-riparian 18 mi.-cropland(Idaho) 74 mi. of new road mostly through northern desert shrub.	132 miles-critical big game range 16 aquatic habitats 12 sage grouse complexes 18 critical raptor areas 131 miles-upland game	Same as above.

	Land Use	Recreation Activities	Archeological/Historical Values	Visual Resources
O'Neil Basin Corridor	(a) Land use impacts common to all corridors include: (1) commitment to land to future utility corridor uses, and (2) development of agricultural land. (b) Development of new roads has the possibility of bringing more people into this relatively unspoiled area.	Highest impact to recreation activities of any corridor. Represents an introduction of an overhead intrusion to an area removed from man's present activities. Extended use recreation in visits per year is the highest of all corridors.	The least impact to cultural resources is expected in this corridor. Majority of this corridor has had a Cultural Resources(BIA Class III) Reconnaissance performed by a qualified archeologist.	54 mi.-high visual impact 29 mi.-medium visual impact 203 mi.-low visual impact Parallels an existing transmission line ROW along a minor part of the corridor, this being in a low visual impact zone.
Highway Corridor	Same as (a) above.	Will impact activities associated with the Humboldt River; however, numerous intrusions exist including railroad, highways, powerlines, etc. Corridor parallels an existing transmission line ROW.	Highest direct and indirect impacts to cultural values is expected in this corridor because of its close proximity to the Humboldt River. This corridor has not been inventoried (Cultural Resources Reconnaissance) for cultural resources.	84 mi.-high visual impact 191 mi.-medium visual impact 85 mi.-low visual impact Parallels existing transmission line ROWs along a majority of the corridor.
Adobe Corridor	Same as (a) above.	Similar in part to the Highway Corridor. Within Elko County, significant day-use recreational activity will be impacted.	Similar, but to a lesser degree, to the Highway Corridor as a lesser amount of the ROW is in close proximity to the Humboldt River. Only one segment of this corridor has been inventoried for cultural resources.	34 mi.-high visual impact 89 mi.-medium visual impact 192 mi.-low visual impact Parallels existing transmission line ROWs along a portion of the corridor, when in the proximity of travel zones (medium or high visual impact zones).
Metropolis Corridor	Same as (a) above.	Similar in part to the Highway Corridor as to recreational uses along the Humboldt River. Similar, but to a lesser degree, to the Adobe Corridor in Elko County as it affects day-use recreation.	More probable impact to cultural resources than the Adobe Corridor; however, less than the Highway Corridor. Only one segment of this corridor has been inventoried for cultural resources.	42 mi.-high visual impact 120 mi.-medium visual impact 160 mi.-low visual impact Parallels existing transmission line ROWs along a portion of the corridor, when in the proximity of travel zones (medium or high visual impact zones).







## MITIGATING MEASURES



# 4

## MITIGATING MEASURES

### INTRODUCTION

If the proposed project is approved, federal, state and local government agencies having jurisdiction in the impact area would issue rights-of-way and other required permits and/or grants to allow implementation of those portions of the proposed construction crossing lands under their respective administration. The impact area includes the actual right-of-way from Oreana, Nevada, to Hunt, Idaho via the selected corridor and, for social-economic factors, the Sierra Pacific Power Company's service area. Some portions of construction, such as staging areas, storage yards, and portions of access roads may extend beyond the corridor limits. (Refer to the Study Area Map and the Service Area map, pp. 1-5 and 2-58.) Involved governmental agencies are obligated under statutes, regulations, and specific contractual requirements to specify stipulations intended to mitigate environmental impacts. These stipulations specify particular physical actions required of the applicants and contractors for compliance.

If a decision is made to construct the proposed transmission line, many of the identified potential impacts would be mitigated by means of the following general measures:

(a) Specific measures to protect the environment (including both public (BLM) and private lands) in regard to the design, construction, and maintenance of the line will be incorporated as stipulations to BLM grants of right-of-way and, for land uses such as roads, staging areas, and storage yards outside the right-of-way, to temporary use permits or temporary rights-of-way. BLM personnel (the Authorized Officer and/or his designated area representative) will monitor construction of the line to insure compliance with these stipulations.

The Authorized Officer (AO) will be the District Manager of the respective District in which construction activity is taking place. The AO will appoint a Compliance Officer for his respective District, and will delegate to the Compliance Officer full authority to interpret and enforce stipulations included in the right-of-way grant. This delegation will be clearly communicated to the applicant at a pre-construction meeting.

If a situation should arise where the Compliance Officer(s) feels that the terms of the right-of-way grant are being violated and



immediate action is necessary, he has the authority to terminate construction activity until adequate corrective measures are taken. Each Compliance Officer will keep his District Manager informed concerning the progress of the project and any problems which may arise. (Source: BLM Instruction Memorandum No. NSO 76-171, July 15, 1976.)

(b) Pre-construction conferences will be held with representatives of Sierra Pacific Power Company, their specific construction contractors, the BLM, and other jurisdictional agencies. These sessions will serve to identify environmentally sensitive areas, and to explain the procedures and stipulations required to protect the environment. In addition, review of two documents, Environmental Guidelines (Environmental Committee of the Western Systems Coordinating Council, 1971) and Environmental Criteria for Electric Transmission Systems (U.S. Department of the Interior, U.S. Department of Agriculture, 1970), will be undertaken by the concerned parties to insure complete understanding and compliance therewith by Sierra Pacific Power Company and their respective contractors.

Mitigating measures for the potential impacts of the transmission line and access roads, to include all lands ownership, are listed in terms of the following:

1. Measures proposed by Federal agencies.
2. Measures proposed by state, county, and local agencies.
3. Applicant - committed measures.

## MEASURES PROPOSED BY FEDERAL AGENCIES

### BUREAU OF LAND MANAGEMENT

The BLM will require the applicant to comply with the following measures intended to mitigate potential impacts to the environment.

#### SOILS, WATERSHED, AND WATER QUALITY

Before any construction begins, the applicant will present a complete plan of operation to the Authorized Officer. (For the purposes of this discussion, Authorized Officer also refers to his designated area representatives.) The applicant shall agree to stipulations as to the location of tower sites, roads, and related facilities, and the construction and rehabilitation methods required to meet the conditions of the grant of right-of-way. The applicant must contact the respective District Manager and other responsible officials for a pre-construction conference to arrive at a mutual and complete understanding of the job, the surface protection measures to be taken, the inspections required, and the liaison and requirements pertinent to the transmission line construction. The proposed mitigation measures for the protection of soils and



watershed deteriorated as a result of construction (as listed below) will be supervised by the Authorized Officer, who will monitor specific site procedures in instances where judgement is required for possible abridgement of stipulations.

BLM will require, at the discretion of the Authorized Officer, dust control measures (watering or graveling) within one mile of residences or other populated areas. Watering of roads will also be required prior to, and during, periods of heavy vehicular traffic in areas of fine-textured soils and in areas where the soil surface is disturbed below a depth of six inches. This will partially mitigate fugitive dust problems and problems of general soil disturbance.

BLM roads required for access by the applicant will be maintained and/or rehabilitated as necessary if utilization by heavy construction vehicles damages these roads.

New construction access roads required for the transmission line will be built to pertinent standards as set forth in BLM Manual 9113; water bars and drainage structures will be constructed as deemed necessary by the Authorized Officer. Specifications for new roads will take into account the equipment that will be using the roads, particularly the heavy construction and line-tensioning vehicles. To the extent possible, new roads required for construction will be routed through areas where excavation and fills are unnecessary or minimal in extent, to achieve grades which will allow passage of the required construction vehicles. These measures will partially mitigate impacts to soils and the visual resource. Water bars will conform to the specifications of the following table:

<u>Slope Percent</u>	<u>Spacing of Water Bars</u>
1% or less	400 feet
1% to 5%	300 feet
5% to 15%	200 feet
15% to 25%	100 feet
Greater than 25%	50 feet or less

Upon completion of construction, BLM will require that storage areas, access spurs, etc. no longer required for line construction and/or maintenance will be cleaned up, spoil piles smoothed, and water bars installed. These measures will mitigate some of the impacts to the soil and watershed and the visual resource.

Soils removed from any area will be stockpiled for use during post-construction rehabilitation, where practicable.

Construction and maintenance activities will not be allowed during periods of weather-caused soil wetness.



All waste oil and petroleum products will be removed to a sanitary landfill which meets state and federal standards. BLM will require applicant to utilize portable chemical toilets during construction activities. No wastes of any kind will be disposed of into streams, stream beds, or onto the soil.

BLM will require culverts (or other environmentally protective measures, at the discretion of the Authorized Officer) to be installed as needed at all live stream crossings along the access routes in order to reduce impacts to streams and the aquatic habitat. Additionally, no dry or intermittent drainage channels will be blocked with debris and no soil along roads and trails will be pushed into stream beds.

## VEGETATION

In areas of natural grass and low brush cover, the need for roads or bladed trails is usually minimal, with the exception of areas of steep terrain. In these locations the natural ground cover will not be removed. Brush blades or back-blade techniques will be used in these areas, if necessary. Cleared plant material will be chipped or shredded for use as mulch during the rehabilitation process.

Reseeding will be carried out in areas identified by the Authorized Officer. The applicant will provide for prompt scarification and seeding of disturbed areas which, in the opinion of the Authorized Officer, lend themselves to successful seeding. (Any scarification on soil surfaces, following soil compaction is beneficial if only for surface runoff control. However, over 60 percent of the soils in the O'Neil Basin Corridor have fine **textured** soils that are not conducive to scarification unless mixed with coarse particles, due to the clay sealing up very rapidly after treatment and frost heaving in this area being highly effective on sub-soil expansion.) The seed mix (determined by BLM) will be provided and applied by the applicant in accordance with specific instructions and techniques prescribed by the Authorized Officer (see also Appendix E, p. 10-27). In addition, BLM will require that inspection and evaluation of seeding measures taken will be made by the Authorized Officer after completion of the first growing season, with further evaluation during the following two growing seasons. If rehabilitation fails to establish in three years due to inadequate reseeding techniques or drought conditions, the applicant would be required to reseed the previously treated area. The revegetation process would partially mitigate impacts to vegetation, soils, and to the visual resource.

After the right-of-way is granted, areas of disturbance anticipated to occur where threatened or endangered flora have been reported, or in similar habitats near reported locations, must be inspected by a qualified field botanist. This selected individual must be satisfactory to both the applicant and BLM. Areas where threatened



or endangered flora occur will be avoided by all construction activity. This includes access roads, overland travel, equipment storage areas, tower sites, staging areas, etc.

## WILDLIFE

All hawks, owls, and eagles are protected by federal law - harassment, disturbance, or killing of these species is prohibited. Therefore, BLM will require the applicant to comply with the following measures:

- \* A field inventory of raptor nesting sites will be performed by a qualified raptor specialist (provided by the applicant and acceptable to the BLM) if construction activities will be occurring during the sensitive nesting/brood period (March through May). This survey will determine if raptor nesting sites which may be affected by construction activities are actually in use. If a nesting site is in use, construction activities will be confined to the nonsensitive period for raptors.

BLM will require the applicant to confine construction activities to nonsensitive periods within all critical wildlife habitats. Sensitive periods are generally defined as follows:

- \* Big game winter habitat--December to April.

- \* Sage grouse strutting/nesting complexes--March to June within critical habitat areas (see Chapters 2 and 3, Wildlife, p.2-29 and 3-13). Where access is currently limited, applicant will be required to close new construction access roads and to restore the area as close as possible to original conditions upon completion of construction activities in order to reduce potential human interference with wildlife and to restore wildlife food, nesting, and protective cover.

BLM will require that the aquatic and stream habitat be spanned by the transmission line. Measures already listed under soils, watershed, and water quality will also mitigate impacts to the aquatic habitat. Protection of the Lahontan cutthroat trout (which is on the Threatened and Endangered Species List) will also be accomplished by adherence to the previously listed mitigating measures.

## VISUAL RESOURCE AND RECREATION

The mitigating measures proposed for the visual resource are also considered the best method for lessening the impacts to the recreation experience. Those specific recreation resources affected by physical and activity impacts of the transmission line construction should be used as "observation sites" for the performance of the on-site visual contrast rating at the time the tower sites



are finally located by the applicant and prior to the beginning of construction.

BLM will require a specific on-site application of the visual resource contrast rating procedure in all areas classified as having high visual impact prior to final design, tower location, road location, storage and staging area designation, etc., so that proper adjustments can be made in order to reduce the visual impacts of the transmission line. (The contrast rating will determine the specific sites in which these measures will apply. Refer to Chapter 3, p. 3-36 for physical and activity impacts, and to Appendix J, p. 10-71, for an explanation of the Visual contrast rating system.) Specific mitigation measures applicable to the visual and recreational experience are:

- \* location of individual towers in critical viewsheds in a manner which avoids skylining towers.

- \* crossing of roads and trails in sensitive visual areas in a manner designed to lessen impacts to the visual resource.

#### HISTORICAL/ARCHAEOLOGICAL

The following mitigating measures were developed in consideration of comments received from the President's Advisory Council on Historic Preservation, (acting on its own and in lieu of the Nevada State Historic Preservation Officer), and the Idaho State Historic Preservation Officer; in compliance with the National Historic Preservation Act of 1966, Executive Order 11593, and 36 CFR 800 procedures. Further consultations with the above will be undertaken in the implementation of mitigating measures as required.

#### GENERAL (applicable to any finally approved corridor):

BLM will require the applicant to engage the services of a qualified cultural resources professional (professionally acceptable archeologists and/or historians) to complete intensive field surveys (BLM class III) for any unsurveyed portions of the right-of-way (regardless of land ownership), which by definition will include associated areas proposed for significant surface disturbance. Such surveys must be completed, documented by the submission of a report to BLM, and specific mitigating measures approved by BLM prior to any construction activities.

The implementation of this policy will not only protect cultural properties from the primary impacts of actual construction but should mitigate the indirect impact of unsanctioned collecting activities that could possibly result from increased accessibility to the area(s). (Reducing the chances of discovery of unprotected cultural properties.)



BLM will require the applicant to engage the services of a qualified cultural resources professional to undertake salvage of cultural properties subject to loss or substantial alteration. When such salvage is indicated, it will only be completed under a scientifically sound research design agreed to by the applicant, the cultural resources professional, and the BLM. The respective State Historic Preservation Officer and/or the Advisory Council on Historic Preservation will also be consulted as required.

Salvage will only be stipulated when it has been determined that it is the most reasonable and prudent course of action. That such salvage has been accomplished will be documented by the transmittal of a final analytical report, completed by the cultural resources professional, to the BLM for review and acceptance. Actual construction can proceed before BLM receipt of the final report but not before the BLM has determined that stipulated cultural resources recovery (salvage) work has been completed in the field, and additionally determined that there is reason to believe that a final report will be submitted within a reasonable amount of time.

If previously undiscovered cultural resources should be found during actual construction activities, the BLM will require construction activities for that area to be temporarily halted until the resource(s) can be inspected and appropriate mitigation completed by a qualified cultural resources professional.

#### Specific

O'Neil Basin Corridor--Sacramento Canyon - If the proposed right-of-way through Sacramento Canyon should ultimately be approved the following special requirements will be completed by a qualified cultural resources professional acceptable to the BLM and the applicant:

(a) Prior to construction, complete a surface collection of cultural materials as indicated in Nevada Archeological Survey Report, 2-83.

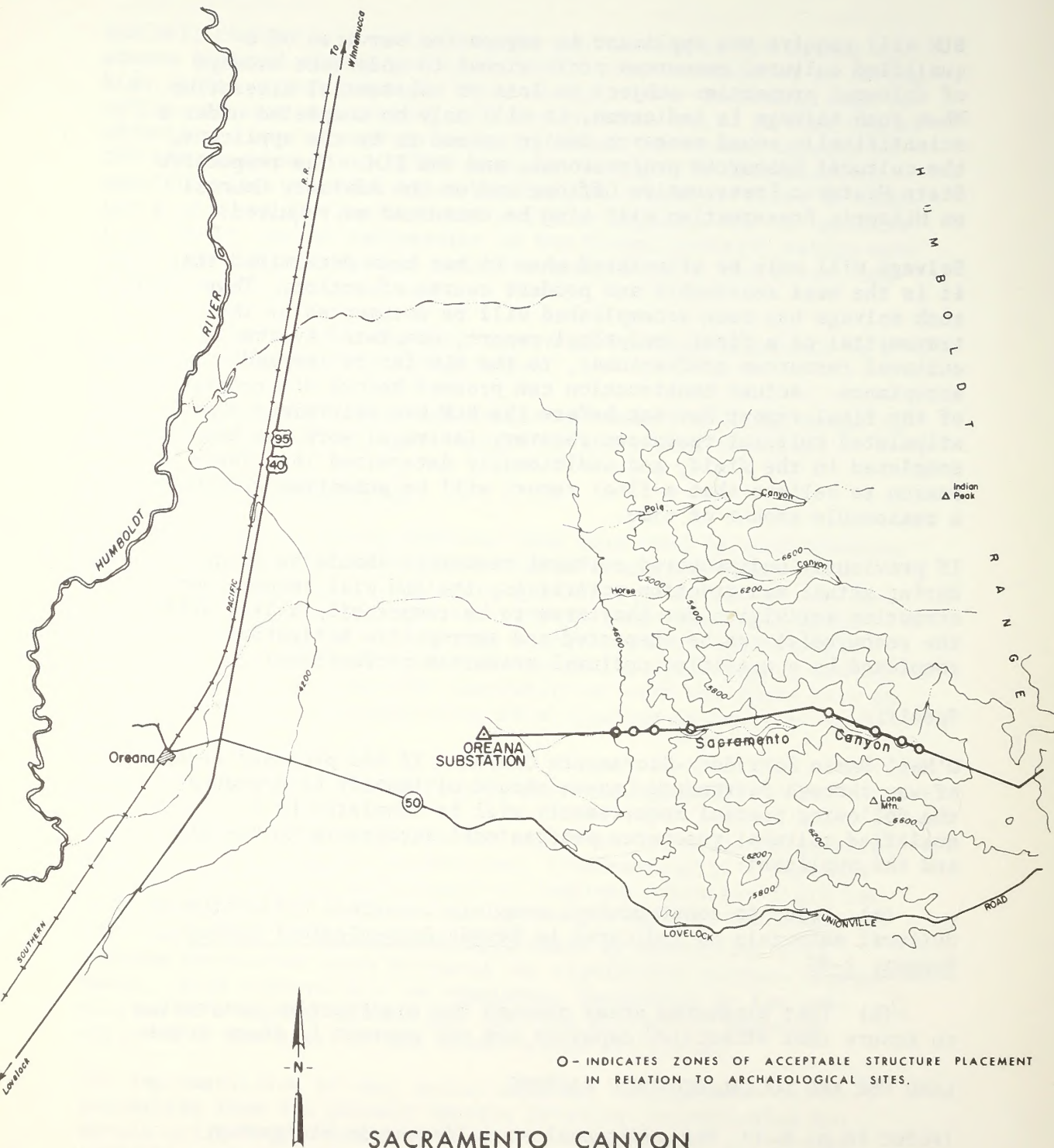
(b) Test excavated areas planned for construction activities to insure that stratified deposits are not present in these areas.

#### LAND USE AND SOCIAL/ECONOMIC FACTORS

(Refer to p. 4-11 for additional social/economic mitigation measures.)

BLM will require the applicant to locate right-of-way corridors in a manner which will cause the absolute minimum interference

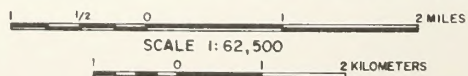




## SACRAMENTO CANYON

OREANA-HUNT TRANSMISSION LINE

UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT





with agricultural production. This also requires the use of self-supporting towers in agricultural areas, especially the area from the northern end of the Sawtooth National Forest north to the Hunt, Idaho, substation. Construction of the transmission line in agricultural areas outside of the crop-growing period will mitigate potential damage to the crops. The applicant will be required to locate the transmission line right-of-way adjacent to existing transmission lines and primary roads within mining districts to the maximum extent possible, which will partially mitigate impacts to existing mining activities.

The impacts to Federal (BLM) planning in the Idaho sections of the right-of-way can be mitigated to a large extent by following recommendations found in the Burley District MFP decision regarding routing any new transmission lines parallel to an existing 138 kv transmission line.

Roadless areas identified under Section 201(a) of the Federal Land Policy and Management Act are restricted from use for construction of roads, transmission lines, etc., until the areas have been fully evaluated for wilderness values. (See Section 603 of the above act.) Any construction within these areas would negate their value for wilderness consideration.

Should the transmission line be built through roadless areas, there would be no method of mitigating the loss of the area from consideration as a wilderness study area. The very fact of the presence of the line within the area negates the wilderness concept as defined by the Wilderness Act of September 3, 1964.

Some indirect methods of mitigating potential impacts involved in this project are possible. For example, the granting of a right-of-way could be delayed until further analysis of the identified roadless areas has been made. Those areas not qualifying as wilderness (as defined by the Wilderness Act) would be deleted from the list of potential study areas. A right-of-way could then be determined utilizing portions of the various corridors and/or the alternative segments discussed in Chapter 8.

Another indirect mitigating measure would be to insure that in the grant of right-of-way the selection of the required 140' wide right-of-way (within the general corridors and/or alternative segments) does not intrude into or visually impact any identified roadless area.

#### ACCIDENTS AND CATASTROPHIES

BLM will require that phase lines crossing the Humboldt and Snake Rivers be properly marked so they can be avoided by aircraft, even though the height of the lines may not exceed the 200-foot FAA requirements.



State and federal regulations pertaining to construction safety standards and protection of traffic during construction will be observed.

#### FEDERAL AVIATION ADMINISTRATION (FAA)

The FAA will require the applicant to conform to requirements as listed in AC70/7460-2F regarding (a) the maximum height above ground and water level (200 feet) that a tower can be without filing a "Notice of Construction" with the FAA, and (b) the tower height-distance relationship in the vicinity of airports. The applicant is required to file a note with the FAA where applicable, and as stipulated under Part 77 of the FAA Regulations.

#### CORPS OF ENGINEERS

The applicant is required to obtain a permit from the Corps of Engineers for river crossing on rivers under their jurisdiction pursuant to Section 404 of the Water Pollution Control Act of 1972 (FWPCA). The Environmental Protection Agency (EPA) in consultation with the Corps has developed guidelines applicable to these permits. The permits regulate the discharge of dredged or fill material in navigable waters as defined by the FWPCA. (See the Federal Register, Vol. 40, No. 141, Part IV: "Permits for Activities in Navigable Waters or Ocean Waters," July 25, 1975, and Vol. 40, No. 173: "Navigable Waters, Discharge of Dredged or Fill Material," September 5, 1975.)

#### BUREAU OF RECLAMATION

The proposed transmission line right-of-way crosses Bureau of Reclamation lands in two areas: (1) in the vicinity of Battle Mountain, just south of Stony Point, and (2) the Salmon Tract Reclamation Project south of Twin Falls, Idaho. The Bureau of Reclamation will require the applicant to give through consideration to existing and proposed irrigation facilities in these areas, and will require the applicant to maintain close liaison with the Bureau of Reclamation during construction activities in these areas.

#### NATIONAL PARK SERVICE

The Park Service maintains the National Register of Historic Places. The applicant will be required to comply with all measures outlined by the National Park Service in regard to sites which are, or may be, identified as Historic Places.



## MEASURES PROPOSED BY STATE & LOCAL AGENCIES

### GENERAL MEASURES

The impacts of population growth within Washoe County (a secondary impact of increased power availability) can be mitigated to a certain extent by a controlled growth policy (for example: zone density maximums) as outlined in the Conservation and Population Plan for Washoe County. This plan has been presented (but not yet adopted as the official plan) by the Regional Planning Commission for Reno, Sparks, and Washoe County.

### NEVADA STATE HIGHWAY DEPARTMENT

The Highway Department will require the applicant to obtain a permit for crossing of state highways by a transmission line. This permit will contain stipulations which the applicant must comply with in order to mitigate the possible impacts of a transmission line crossing the highways. (Refer to Table 3-5, p. , Potential for Electronic and Visual Interference.)

### IDAHO DEPARTMENT OF TRANSPORTATION

The Idaho Department of Transportation will require the applicant to comply with similar standards as delineated above for the Nevada Highway Department.

### IDAHO DEPARTMENT OF PUBLIC LANDS

The applicant will be required to obtain permits for:

- \* Crossing Salmon Falls Creek and the Snake River, and
- \* Crossing any portion of state lands.

### IDAHO DEPARTMENT OF WATER ADMINISTRATION

The applicant will be required to apply for and obtain a stream channel alteration permit for any alteration of a continuously flowing stream below the mean high water mark.

These permits will contain stipulations designed to mitigate possible impacts of transmission line construction.

### APPLICANT-COMMITTED MEASURES

The measures listed in this section have been taken from the SE&A Environmental Analysis of the Tracy-Hunt transmission line, Chapter IV, pp. V-14 through V-31. In reference to the measures listed in that section, the applicant has stated:



"All of the mitigating and enhancing measures discussed...are recommended and would be employed to mitigate adverse environmental impacts and foster beneficial impacts. Many of the measures have already been employed during the development of the project." (SE&A Environmental Analysis, p. V-31.)

BLM considers the measures discussed in the above-mentioned section of the applicant's analysis to be necessary mitigating measures and that the applicant and contractors will adhere to the provisions of the measures (as listed below). Some overlap of measures listed as "applicant-committed" and measures mentioned in the preceding section has intentionally occurred. The overlap is used to avoid, where possible, conflicts of wording or definition between the various measures employed to mitigate possible impacts to the environment, and to clarify as much as possible exactly what is considered to be a mitigating action. (Most of the measures listed below are direct quotes, a few have been edited for clarity.)

#### SPECIFIC APPLICANT-COMMITTED MEASURES

In terms of safety, the line would be safeguarded at both ends and at the intermediate substations from the potential hazards of fire and shock. Lightning protection would be provided by shield wires on the towers and by grounding the circuits in the substations.

Care would be taken to control erosion during and after the construction of the proposed transmission line. To minimize the potential impact on water quality, construction would be performed to cause the least disturbance to the soil.

Cultivated meadowland is avoided wherever possible. When cultivated land is crossed the largest reasonable span between towers would be used and the right-of-way would be aligned along fences, ditches, and meadowland perimeters to avoid conflicting with any agricultural production. When crossing land used for agricultural purposes the right-of-way would be located parallel to existing roads, insuring that a minimum area of productive land is used for tower sites, reducing the impact to individual farmers and farming operations.

When crossing irrigated land, the towers would be located to avoid conflicting with the operation of the various types of sprinkler/irrigation systems encountered. In order to avoid conflicting with installed sprinkler systems where possible, the transmission line corridor would be located along major roads and property lines.



The corridor would be located along the perimeter of fields in which harvestable crops are grown in order to avoid interference with harvesting equipment.

Areas containing plant communities such as meadow, willow, and juniper would be crossed at their narrowest points and, where possible, the routes avoid hayed meadows and aspen stands. Many of the riparian areas have been cleared for agricultural uses and the natural plant cover no longer exists. However, care would be taken to protect the remainder of the riparian communities encountered.

Erosion controls would be implemented in order to minimize the impact on the existing plant communities.

Impact to wildlife habitats would occur mainly during the construction phase, and while these impacts would normally be temporary, every effort to minimize them would be taken. A close supervision of construction personnel to discourage undue harassment and harm to wildlife would be provided.

The distances prescribed between the conductors of the transmission line and the length of the insulators would preclude the possibility of large birds, such as eagles, being electrocuted by the energized lines.

The applicant has compiled within the national policy of protecting endangered archeological resources by entering into an agreement with the Nevada Archeological Survey to:

- \* Conduct an intensive archeological reconnaissance along the proposed right-of-way ... and to make recommendations for the preservation of archeological values or to mitigate unavoidable adverse impacts on such values.

- \* Mitigate unavoidable adverse impacts on fragile pattern sites by an immediate, complete, and systematic collection of ... specimens from the surface of these sites.

Direct and significant indirect impacts would be mitigated at some sites by the on-site strategic placement of towers within the proposed right-of-way as it is now surveyed, and by the on-site strategic location of access roads to the proposed right-of-way to avoid sites containing valuable resources.

Construction and maintenance crews would be instructed, and held liable, on the provisions and intent of the state and federal antiquities preservation acts and the (National) Environmental Policy Act of 1969, in order to enlarge their appreciation of the importance of the archeological sites encountered along the right-of-way.



Transmission line towers would not be erected on the identifiable sections of historic trails and railroads that would be crossed by the proposed transmission line. Towers would be located as far as possible beyond these sites on either side to partially mitigate the visual intrusions.

Sierra Pacific Power Company has stipulated by letter dated February 22, 1977 (comment letter No. 55) that installation of towers in those areas requiring construction access (where over-land travel is not feasible) will be accomplished by helicopter methods.



## UNAVOIDABLE ADVERSE IMPACTS

### INTRODUCTION

The following is a summary of the investigation into the adverse impacts of the proposed project. It is intended that the information contained in this report will be used by the project sponsor and other interested parties to make decisions about the project and its impacts on the environment and the community.

### THE PROJECT

## UNAVOIDABLE ADVERSE IMPACTS



2. The purpose of this study is to determine the effect of the proposed changes on the overall system performance. The study will be conducted in a controlled environment, and the results will be compared to the current system performance. The study will also identify any potential risks and mitigation strategies.

3. The study will be conducted in a controlled environment, and the results will be compared to the current system performance. The study will also identify any potential risks and mitigation strategies.

UNAVOIDABLE  
ADVERSE IMPACTS



## 5

# UNAVOIDABLE ADVERSE IMPACTS

## INTRODUCTION

The following is a summary of the unmitigated adverse impacts that would remain if the proposal is implemented and the effective mitigating measures delineated in Chapter 4 are applied. In this chapter the relative values and significance placed upon these impacts, and the degree of who and what are affected are discussed.

## AIR QUALITY

Dust production would be the only unavoidable adverse impact on air quality. Construction-caused dust generation would be localized and short-term; however, of more concern is the fugitive dust caused by wind and vehicular traffic after construction has been completed. In areas where revegetation efforts are successful, the problem would gradually diminish. In areas such as the salt desert shrub type (which is less conducive to rehabilitation), fugitive dust problems would continue virtually unabated.

## WATER

Most adverse impacts on water resources resulting from construction activities can be mitigated by the measures discussed in Chapter 4, Soils, Watershed and Water Quality, p. 4-2

Secondary impacts on water resources, i.e., increased population growth and irrigation of certain areas resulting from increased availability of electrical power, are unavoidable and cannot be mitigated by the applicant. (See Chapter 3, Water, p. 3-3 .)

## MINERAL RESOURCES

The minimal disruption of mining exploration activity or small surface mining operations in mineralized areas would occur only during construction through those particular areas, an impact which cannot be mitigated.

## SOILS & WATERSHED

Between 276 and 843 acres of soil (depending on the corridor selected and construction method) would be permanently impacted by the proposed construction. These impacts would include surface



soil disturbance in all areas, subsoil disturbance in areas requiring construction access road cuts and fills of a substantial nature, and on tower locations, which would affect the entire soil profile down to and including the substrata.

The unavoidable adverse soil impacts can be categorized as follows:

- a) Sheet and rill erosion would result from any soil disturbance due to soil compaction, which would reduce infiltration rates.
- b) Organic matter displacement allowing for raindrop splash effects and subsequent overland flow and erosion.
- c) Soil profiles which have developed congruently with the natural vegetation would be interrupted for several decades. (See sections on vegetation, water, and ecological interrelationships in Chapters 3 and 5.)
- d) Under normal conditions, soil losses due to natural effects are approximately 2 to 4 tons per acre per year. The activity associated with construction of the transmission line could create bare-ground conditions resulting in up to 20 to 30 tons of soil loss per acre per year, this rate gradually declining as revegetation occurs. Project construction could contribute to soil conditions in the right-of-way area which would allow for wind erosion rates of 20 to 50 tons per acre per year. This rate of erosion is particularly significant at elevations below 5,000 feet, due to the marginal vegetation-producing climate at those elevations which makes revegetation difficult or impossible.

## VEGETATION

Unavoidable disturbance to vegetation would occur as a result of the project being implemented. The areas most affected would be those in the salt desert shrub type, as this environment is least receptive to natural revegetation or re-seeding. Regrowth in these areas could take several decades, and under some circumstances when regrowth does occur, salt desert shrub is replaced by invader weed species.

Even in treated areas, the success of revegetation attempts is uncertain. A series of dry years could suppress the newly-seeded species. In this event, natural revegetation could take at least 10 years.

The availability of new access within the area of the project would attract use by recreational vehicles. Although some of those roads may be "put to bed" (see Chapter 4, Soils and Watershed, p. 4-2 ), use may continue, as any vestige of a trail is attractive to four-wheel drive vehicle users -- often, the more primitive the trail, the more attractive it is. This would have



an unavoidable impact on the vegetation of some areas and could interfere with revegetation efforts.

## WILDLIFE

### TERRESTRIAL

There would be a loss of vegetation in areas where revegetation is impossible or impracticable, or where revegetation techniques are not successful. This vegetation provides essential food and nesting/protective cover for birds and small animals.

Increased availability of access roads and trails may lead to an unquantifiable increase in indiscriminate shooting of raptor species perching on transmission towers.

The conductors would cause an unquantifiable increase in impact deaths to raptors, waterfowl, and other birds, especially in the area where the transmission line crosses the Humboldt and Snake River Valleys.

Increased wildlife disturbance would occur in critical wildlife habitat areas due to increased human activity along the maintenance access road and along the other roads (even if "put to bed").

### AQUATIC

An unavoidable impact would result from the short-term sedimentation at stream crossings under conditions of normal construction operations. This impact is not expected to involve more than a 1-year period.

## LAND USE

The implementation of the proposed project would result in the discontinuation of use of small areas of land occupied by the transmission line substations, towers, and the remaining trails and access roads. This would impact the land for the life of the project.

### ROADLESS AREAS

Construction of a transmission line across or adjacent to identified roadless areas could preclude future consideration of these areas (or portions of areas) as to their suitability for further wilderness study or for possible designation as wilderness areas. The route of the transmission line could be designated as a right-of-way corridor, as described in Section 503 of the Federal Land Policy and Management Act of 1976, thereby extending the use of the land area for rights-of-way beyond the expected life of this project.



## RECREATION

### HIGHWAY CORRIDOR

The presence of a powerline within the Highway Corridor would represent an additional overhead intrusion visible to travelers along I-80, Highway 93, and to recreationists along portions of the Humboldt River.

### METROPOLIS AND ADOBE CORRIDORS

The recreation experience of short-term recreationists from the communities of Battle Mountain, Carlin, and Elko would be affected by the presence of the transmission line within these corridors.

### O'NEIL BASIN CORRIDOR

The presence of a powerline along the O'Neil Basin Corridor would affect destination-oriented use, where recreationists stay within the area for extended periods of time. The opportunity to participate in a wide range of recreation activities exists in this corridor location, and the presence of a powerline there would be a major intrusion within an area far removed from civilization and containing few existing man-made intrusions.

## SOCIAL / ECONOMIC VALUES

Uncontrolled population growth (a secondary impact partially ascribable to the increased availability of power) can lead to environmental degradation of extremely broad scope and long-term effect (as outlined in the Conservation and Population Plan for Washoe County, produced by the Regional Planning Commission for Reno, Sparks, and Washoe County).

## VISUAL RESOURCE

The presence of transmission towers, transmission lines and the right-of-way in general, along with certain necessary construction practices, would result in visual impacts that cannot be completely avoided or mitigated. The long-term impact would be, therefore, an additional man-made intrusion placed on the natural landscape. Surface disturbance would result from construction activities including access roads, preparation of sites, tower construction, line construction, and clearing operations in general.

## HISTORICAL / ARCHEOLOGICAL VALUES

If the mitigation measures as outlined in Chapter 4 were followed, no adverse impact on identified historical/archeological material would be expected,



Depending on the specific location of construction activities, there may be adverse impacts to historical/archeological material which has not been previously located by cultural reconnaissance.

## ACCIDENTS & CATASTROPHES

The transmission line and towers cannot be constructed to withstand damage due to significant earthquakes and seismic shifts. The resulting power outages cannot be mitigated beyond the standard protection afforded by interties with adjacent systems. (This damage, although geologic in nature, is discussed in Chapter 3, Accidents and Catastrophes, p. 3-43.)

Low-flying aircraft may collide with the transmission lines despite implementation of safety precautions mentioned in Chapter 4, p. 4-9 .

Damage to the line from sabotage or natural disasters cannot be prevented.

TABLE 5-1

### COMPARATIVE IMPACTS OF CORRIDOR (BY SEGMENT)

Environmental Components	Oreana to Valmy Segment		Valmy to State Line Segment				State Line to Hunt Segment	
	O'Neil Adobe Metropolis	Highway	O'Neil	Highway	Adobe	Metropolis	O'Neil	Adobe Metropolis Highway
Topography		X		X				X
Climate	---	---	---	---	---	---	---	---
Air Quality	---	---	---	---	---	---	---	---
Geology	---	---	---	---	---	---	---	---
Soils and Watershed		X		X				X
Water Resources								
Surface	X				X			X
Ground	---	---	---	---	---	---	---	---
Vegetation		X		X				
Wildlife								
Aquatic	X				X			X
Terrestrial		X		X				X
Land Uses								
Land Ownership	X		X				X	
Agricultural Production	---	---	---	---	---	---	---	---
Livestock Production		X		X				X
Residential Uses	X					X	X	
Industrial Activities	X					X	X	
Recreational Uses	X			X				X
Designated Recreational Lands	X			X			X	
Other Recreational Lands	X			X			---	---
Public Utilities	---	---		X			---	X
Archeological/Historical Values	X		X					X
Visual	X				X			X
Ecological Interrelationships	---	---	---	---	---	---	---	---

X - indicates the corridor segment which would reduce or eliminate impacts upon the particular environmental component. Absence of an X indicates no measurable environmental impact difference among corridors.

An X indicates the corridor segment which would reduce or eliminate impacts upon the particular environmental component after the mitigating measures as set forth in Chapter 4 have been applied. Absence of an X indicates no measurable environmental impact difference among corridors.



## ECOLOGICAL INTERRELATIONSHIPS

Any disturbance to the components of an ecosystem would result in a continued disruption of the ecosystem.

Secondary impacts of increased dissolved salts in irrigation return flows entering the Humboldt River and the Toulon and Humboldt Marshes, (with the resulting effects on emergent and submergent vegetation), would be unavoidable and could not be mitigated.



## RELATIONSHIPS BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT & THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

Productivity can be defined as "short-term" and "long-term" and "local" and "global" uses of the environment. The purpose of this report is to examine the relationship between local and global uses of the environment and productivity.

There are several ways in which the environment can be used. One way is to use the environment for short-term productivity. Another way is to use the environment for long-term productivity. The purpose of this report is to examine the relationship between local and global uses of the environment and productivity.

## RELATIONSHIP BETWEEN LOCAL SHORT- TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY



The first part of the lecture is devoted to the question of how the environment is valued. The second part is devoted to the question of how the environment is protected.

The third part of the lecture is devoted to the question of how the environment is managed. The fourth part of the lecture is devoted to the question of how the environment is improved.

# RELATIONSHIP BETWEEN LOCAL AND TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY



## 6

### RELATIONSHIPS BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT & THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

Precisely what is meant by "short-term" and "long-term" has varied considerably among the various environmental statements. For the purpose of this report, "short-term" shall refer to the projected useful life of the line, or approximately 50 years.

There are several reasons why impacts directly related to power-lines would extend beyond this period. Experience of the Bonneville Power Administration (USDI, BPA, Environmental Statement on General Construction and Maintenance Program, 1974) has shown that, in most cases, existing transmission corridors are upgraded in response to increasing demand. In many areas, according to BPA, new transmission lines are being built parallel to existing rights-of-way, further committing the land to utility purposes. Additionally, as long as demand and load centers exist, current rights-of-way will probably continue to be the best available routes from generation sources to the consumer. Although the transmission facilities could be completely removed in 50 years, these are some of the factors that would make this event unlikely.

Sierra Pacific Power Company does plan to use the corridor established by their intertie number 2 (Tracy/Hunt 345 kv line) for a parallel 230 kv transmission line when construction is completed on the second unit of their proposed coal-fired power plant at Valmy, Nevada. The first unit would use the transmission line discussed in this statement to transmit power from Valmy to Reno. One result of discussing these projects in separate reports is the commitment to two rights-of-way for parallel transmission lines, rather than including the possibility of constructing one double-circuit line (the two transmission systems on a single set of towers).

Some of the long-term effects that could result from implementation of the proposal, regardless of whether or not the facilities themselves remain in place longer than 50 years, include soil loss through erosion, vegetative disruption in the more sensitive areas, the visual impact of construction scars and the towers, increased access into some areas, and future land-use planning decisions resulting from the physical presence of a transmission line in the area. These factors all contribute to a degradation of the recreational resource.



The visual impact of the line itself would be felt over the long term if the towers are not removed at the end of the 50-year period. Vegetative and soil losses, as well as faunal displacement, cover a proportionately small part of the total resource area but are still considered important impacts.

A number of secondary long-term impacts could be associated with completion of the project. One is increased recreational use of the area due to improved access and increased population pressures. Mining and other industrial activities could also expand as a result of increased power availability in the area. In addition, the availability of power is one of the required factors for agricultural production in the region. Increased agricultural production, in turn, would result in a long-term draw on the groundwater reserves of the hydrographic basins. Calculations (described in Chapter 2, Land Uses, p. 2-37) show this use of groundwater would not exceed the annual recharge. Return flows could add markedly to the salt content of the Humboldt Marshes, however.

In summary, other than the long-term impacts resulting from construction activities, many of the long-term impacts are dependent on the continued existence of the powerline. For the reasons stated above, it is likely that an electric transmission system would continue to exist in the established corridor.

The newly enacted Federal Land Policy and Management Act (PL 94-579, October 1976) provides additional guidance on the subject of right-of-way corridors.

Sec. 503. In order to minimize adverse environmental impacts and the proliferation of separate rights-of-way, the utilization of rights-of-way in common shall reserve to the Secretary concerned the right to grant additional rights-of-way or permits for compatible uses on or adjacent to rights-of-way granted pursuant to this Act. In designating right-of-way corridors and in determining whether to require that rights-of-way be confined to them, the Secretary concerned shall take into consideration national and State land use policies, environmental quality, economic efficiency, national security, safety, and good engineering and technological practices. The Secretary concerned shall issue regulations containing the criteria and procedures he will use in designating such corridors. Any existing transportation and utility corridors may be designated as transportation and utility corridors pursuant to this subsection without further review.



New regulations on the designation of utility and transportation corridors have not yet been issued.

The short-term utilization of the land for a transmission line right-of-way could preclude consideration of existing roadless areas for future analysis as to the suitability of these areas for wilderness designation. The Wilderness Act of September 3, 1964 states that it is a long-term policy of Congress to maintain a wilderness resource: "It is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness." (Section 2(a).)

IRREVERSIBLE AND PRETRIBUTABLE  
COMMITMENTS OF RESOURCES











IRREVERSIBLE AND IRRETRIEVABLE  
COMMITMENTS OF RESOURCES



# 7

## IRREVERSIBLE & IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible and irretrievable commitments of resources involve those commitments of resources that, once initiated, would continue beyond the life of the project, and those resources that are not replaceable. Projects may be considered as irreversible if costs make the removal of structures unlikely.

The estimated amounts of soils that would be disturbed by new construction access roads are as follows:

<u>Corridor</u>	<u>Estimated Acres Disturbed</u>
O'Neil Basin	777
Highway	470
Adobe Range	646
Metropolis	570

Disturbance at tower sites, figuring 635 square feet of disturbance per tower, includes the following impacted acres by corridor:

<u>Corridor</u>	<u>Estimated Acres Disturbed</u>
O'Neil Basin	21
Highway	26
Adobe Range	23
Metropolis	24

Soil losses due to water erosion would not be as great if rehabilitation measures are followed. Wind erosion would occur until endemic annual plants become established. This often takes 3 to 5 years in areas susceptible to revegetation. If the access roads are frequently used by ranchers and recreationists, revegetation would not occur. Soil loss can be considered as the greatest irretrievable commitment of a resource because of the slow formation in this dry climate. It has been estimated that from 400 to 1,000 years is required to form an inch of soil in this region.

Although the land required by towers and access roads could be returned to its natural state, the land must be considered to be irreversibly committed for the life of the facility (50 years), and perhaps longer, since another system could be constructed in its place at a future date. The lands occupied by substations



would be irretrievably committed for industrial use. The long-term use of land for transmission corridors and substation sites could lead to land development adjacent to these facilities which would not otherwise occur (i.e. industrial development). Removal of the transmission facilities would not necessarily return the land to its previous use.

Location of a transmission line could affect the availability of that land for the extraction of a low unit-value mineral such as sand and gravel. Relocation of a portion of the line would be economically practical if a valuable mineral were discovered along the right-of-way in concentrations and quantities suitable for open-pit mining methods.

Any undiscovered cultural resources accidentally disrupted during construction would be irreversibly damaged and could lose much or all of their archeological or historical value.

Certain kinds of cultivation, such as circular irrigation, depend on large areas of unobstructed access. Use of the self-supporting towers would take less space in cropland areas and would help alleviate the obstruction problem. Nevertheless, small portions of land may be uneconomical or unavailable for farming for which the land owner would be compensated.

Construction of transmission facilities would irreversibly change the ecological interrelationships on, and adjacent to, the construction site by altering the habitats through soil and vegetative disturbance. These localized impacts on ecological interrelationships would not alter the character of the entire ecosystem, but would last as long as the effects of soil and vegetative disturbance persist.

The aluminum, steel, copper, and other materials used in construction would be irretrievably committed to transmission uses. Retired equipment is usually reclaimed for use in other transmission facilities. There would also be an irretrievable commitment of fuels used by equipment during construction of the project.

Areas cleared of plant material would remain in a regressive state for many years. Plants which do move in tend to be invader species, such as halogeton. The loss of some plant species, chiefly within the salt desert shrub type which is not conducive to artificial revegetation and which has a long delay in natural climax revegetation, can be considered an irretrievable loss of that vegetative resource. In perspective, this vegetative commitment would be small because the disturbed areas are minimal in relation to the size of the entire resource, but the commitment is significant in intensity.



The distribution of wildlife species would be altered. Disturbance and increased human activity would cause some sensitive, restricted-habitat species, such as sage grouse and raptors, to leave the area. Species more tolerant of disturbance could move into the altered habitat. This degree of disturbance would be significant but of small areal extent because the disturbed habitat would be limited to narrow, linear strips of land in the right-of-way and access road areas.

Some loss of livestock forage would occur. The permanent loss of animal unit months (AUMs) by corridor is as follows: O'Neil Basin Corridor - 66 AUMs; Highway Corridor - 41 AUMs; Adobe Range Corridor - 54 AUMs; Metropolis Corridor - 47 AUMs. (See Table 3-4, p. 3-21.) This permanent loss of AUMs would be extremely small when compared to the number of AUMs sold in northern Nevada and southern Idaho in 1975 (1,565,000 AUMs).

The possibility exists that a right-of-way granted for this project could, at some future date, be designated as a "right-of-way corridor" as defined in Section 503 of the Federal Land Policy and Management Act of 1976.

This possible action would:

- a) Preclude further consideration and analysis of the wilderness values of any impacted roadless area during the life of the project, and
- b) Preclude any future consideration of these areas during the life of any future rights-of-way which may be granted within the designated corridor.

There would be a long-term loss to the visual resource regardless of where the proposed line is constructed. The transmission system would not be dismantled and removed for a minimum of 50 years and would probably remain in place beyond that time. If at a future date the line is dismantled, some scars caused by heavy equipment use would remain for generations, in spite of revegetation practices. These scars would involve an irreversible commitment of the visual resource within the right-of-way and access road areas.







## ALTERNATIVES TO THE PROPOSED ACTION







## 8

### ALTERNATIVES TO THE PROPOSED ACTION

#### NEW METHODS OF TRANSMISSION

No basically different methods for bulk transmission of electric energy from generating source to load centers are presently available. Various groups are conducting research into possibilities of microwave and laser transmission of energy and improved storage devices. However, these methods will not be practical for many years and cannot be considered as an alternative to the proposed action at this time (USDI, Bonneville Power Administration, General Construction and Maintenance Program, 1974).

#### UNDERGROUNDING

Technology in the field of undergrounding high voltage transmission lines has not progressed to the point where such an action can compete economically with overhead transmission lines. This method of energy transmission would require use of a trench-constructed corridor which can cause considerable disruption of the environment, particularly in arid country along the proposed route. The right-of-way would have to be cleared along the entire route to permit trench construction and to allow the installation of the underground transmission lines, cooling system, and other necessary equipment. Also, a backfilled trench, if it is on a slope, is difficult to stabilize in order to prevent longitudinal erosion. Soil erosion would be severe due to the extensive soil disturbance, the need to trench straight up hills, and the slow recovery time of vegetation on the disturbed soil profile. In general, the main benefit from undergrounding would be in the elimination of overhead intrusions (and thus, visual impacts) but, the effect of trenching and the resultant erosion and revegetation problems would create more adverse impacts than the conventional methods of building transmission lines.

#### UPGRADING EXISTING TRANSMISSION LINES

Replacing an existing line with a higher capacity line limits the impacts of the project to those associated with construction activity, i.e., temporary disturbance of wildlife, noise, dust, and erosion, plus the impacts of re-using the roads and access trails. Some additional visual impact may result, if taller towers are used and additional right-of-way width is required because of voltage requirements. The major limiting factor in the use of this technique is the need to remove existing lines



from service to allow rebuilding, a step which cannot be taken where the existing line is needed for continued service to an area. Since the stated purpose of proposed action is to meet growing power demands while maintaining reliability requirements by interconnecting with other utility systems and proposed generating plants, these all but preclude the possibility of upgrading existing lines to accomplish these objectives.

### MULTIPLE-CIRCUIT TOWERS

Double-circuit construction allows the transmission of electricity over one transmission line structure equivalent to that transmitted over two conventional lines. The obvious appeal of double-circuit towers is the narrower right-of-way which could accommodate two parallel lines, especially between the Valmy substation and the Reno-Sparks area where two parallel transmission lines are planned. Although total right-of-way area may not be as large (double-circuit), the steel towers required would need more base area and higher-standard access roads would probably be needed for construction of double-circuit towers. However, the greatest problem with the double-circuit technique is that the reliability of power delivery would be reduced, thus making this type of design undesirable to the applicant.

### LOCAL GENERATION

If the proposed transmission line is not constructed, then the only way of meeting electric utility power needs in Sierra Pacific's service area would be the addition of central station units located at Sierra Pacific's Tracy and Fort Churchill generating stations. The only viable system that could be installed in the preferred time frame would be small diesel engines or oil-burning turbines. Since fuel oil and natural gas are primarily imported, it can be expected that fuel costs for supplemental generation alone would approximate or exceed the total cost of the energy purchased. Fuel availability may also represent an additional barrier to development of on-site generation. Environmental impacts of on-site generation cannot be stated with any degree of accuracy; however, this type of electrical power generation could cause lowered air quality (air pollution due to burning oil or coal to generate electricity), and could impact surface and ground water. In any event, the use of on-site generation would not negate the need for additional energy input into Sierra's primary load centers.

### NUCLEAR POWER

The alternative of using nuclear power to generate electricity is economically feasible, but the questions of proper siting, design, operation, transportation, and reprocessing of fuels, and storage



of waste products remain unanswered to the satisfaction of many concerned agencies and the public in general. Although the applicant has precluded nuclear power usage at the present time, long-range goals of the Company include the possibility of nuclear generation if some of the above questions can be adequately answered, coupled with the availability of favorable financing.

### GEOTHERMAL POWER

As demonstrated by the geothermal generating plants at Geysers, California, geothermal steam can provide very substantial energy once developed. However, due to the very high mineral content found in geothermal developments in northern Nevada, this potential source for generating electricity has been found too uneconomical at the present time. In this regard, Sierra Pacific Power Company explored the geysers at the Beowawe KGRA (known geothermal resource area) a decade ago as a potential power generating source, but an investment of more than \$300,000 failed to produce a consistent steam source.

### LIMITING CONSUMPTION OF ELECTRICITY

An alternative which could reduce the size and number of new transmission facilities needed to serve Sierra Pacific's service area is a reduction in consumption of electricity. In general, a reduction in peak demand could defer the need for a new facility. Due to the diversified, growing economy of the Reno-Sparks area, a voluntary reduction would be impossible to obtain. Even if a reduction could be obtained, the overall growth of the area would still result in an eventual need for additional power. (For a detailed look at various techniques developed for reducing demand for electricity, see the Environmental Statement for a General Construction and Maintenance Program, USDI, BPA, 1974, pp. 86-94.)

### DELAY OF CONSTRUCTION

The transmission facilities (transmission line/substation) are timed to meet power demands as projected by the applicant for the time of energizing of its facilities or shortly thereafter. Delaying construction of the entire program would be beneficial to the environment only if technological improvements or changes in demand were anticipated which would avoid the necessity of building the new facilities. Delay of construction would likely result in increased cost as materials and labor costs continue to increase. Delays could possibly preclude the use of the environmentally preferred route should land changes occur during the delay.



## NO ACTION ALTERNATIVE

If new transmission facilities were not built to meet system needs resulting from load increases, the impacts described in the previous section would not occur. Non-construction would also result in increased risk (over a period of time) of power failure in the Reno-Sparks-Lake Tahoe areas. Power failure would have a significant impact on residential users, agriculture, and commerce, as well as the health and welfare of the public generally. Impacts to the service/gaming industry would result in serious social-economic impacts. Economic growth would be stifled, out-migration of young people would probably increase, employment opportunities would be limited, and in general, the community growth would be limited if additional power is not made available.

## ALTERNATIVE RIGHTS-OF-WAY

As presented throughout this statement, four general corridors have been concurrently analyzed. During the development of the final statement, a need to specifically identify three possible alternatives to these corridors has been recognized. These adjustments are discussed in this section as alternative segments and are identified as follows:

Limerick Canyon - an alternative routing of the O'Neil, Adobe and Metropolis Corridors covering the first 8 miles of their common alignment east from the Oreana substation. (Alternative Map 1, p. 8-5 .)

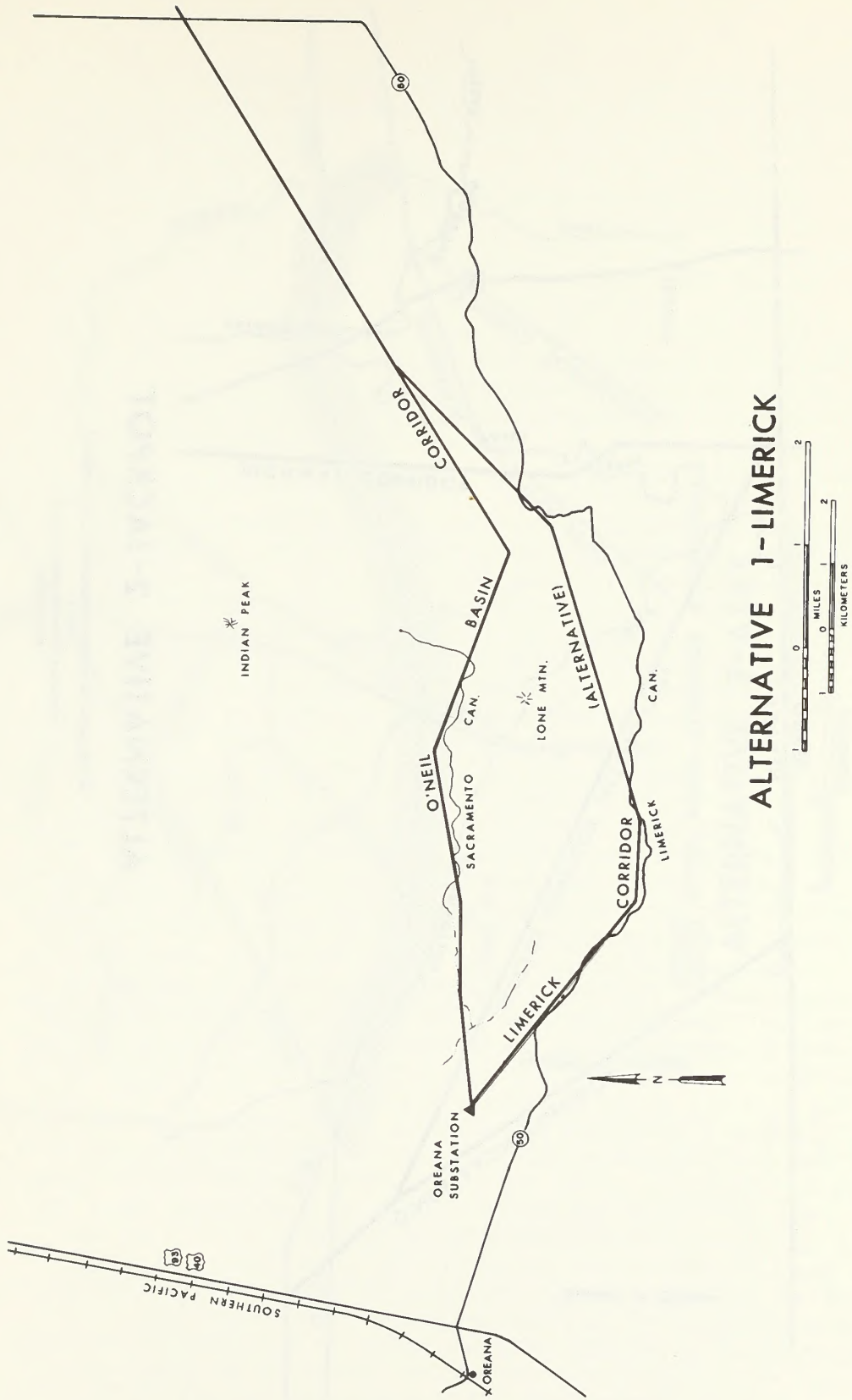
Jackpot - a 7-mile realignment of the O'Neil Basin Corridor near the Nevada-Idaho border. (Alternative Map 2, p. 8-6 .)

AT&T Cable - an alternative connecting link between the O'Neil Basin Corridor and the Adobe and Metropolis Corridors to the south and east. This routing generally follows the alignment of an existing underground coaxial cable right-of-way. (Alternative Map 3, p. 8-7 .)

The Limerick Canyon alternative follows the general routing of the Lovelock-Unionville road (Nevada Highway 50) one and one-half miles south of Sacramento Canyon. This route rejoins the O'Neil, Adobe and Metropolis Corridors eight and one-half miles east of the Oreana substation.

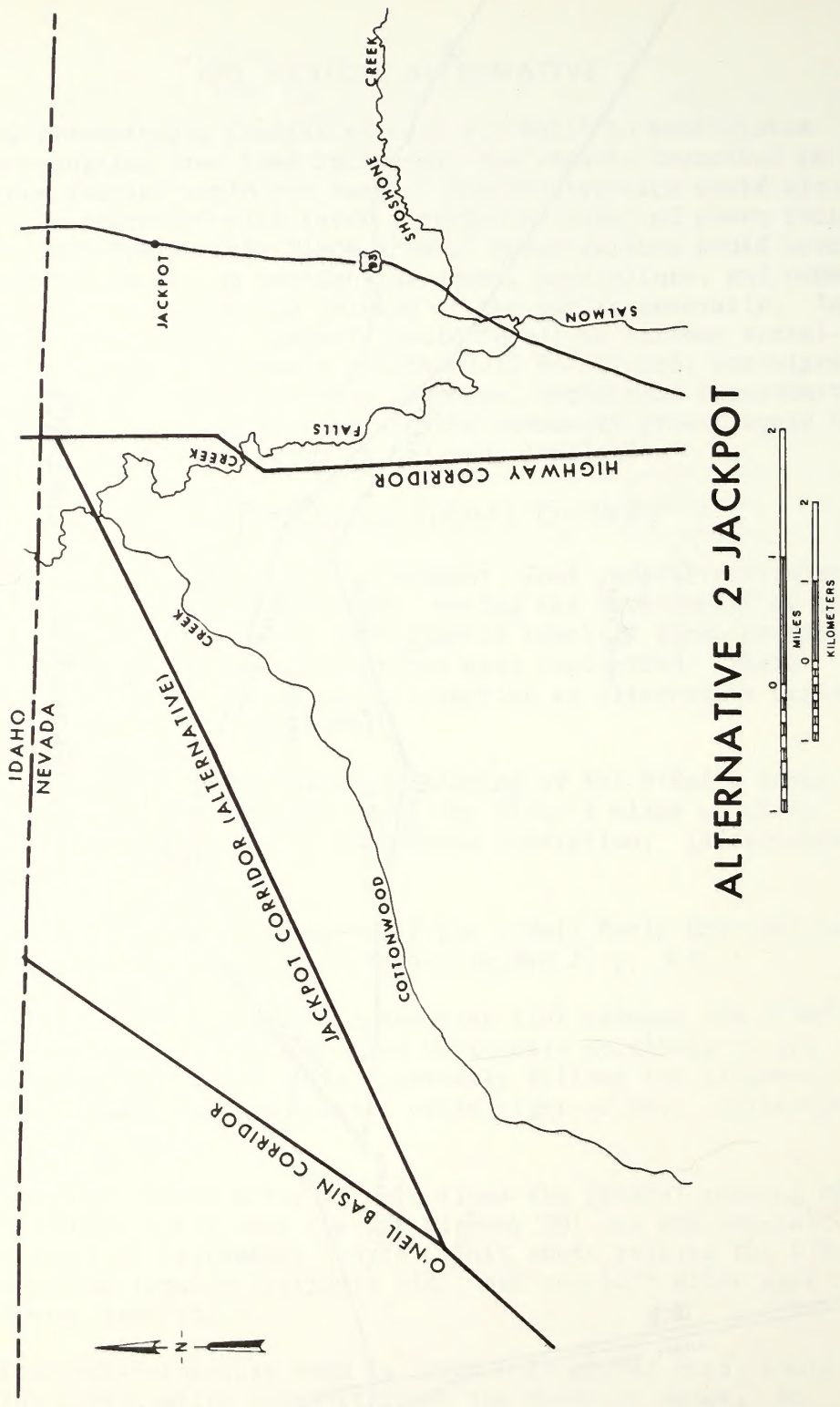
The Lovelock-Unionville road (a light-duty gravel road) would provide good quality access through the Humboldt Range. An existing electrical distribution line parallels this road. There are numerous existing mining claims and surface mining operations in the vicinity of this road. The presence of the above features





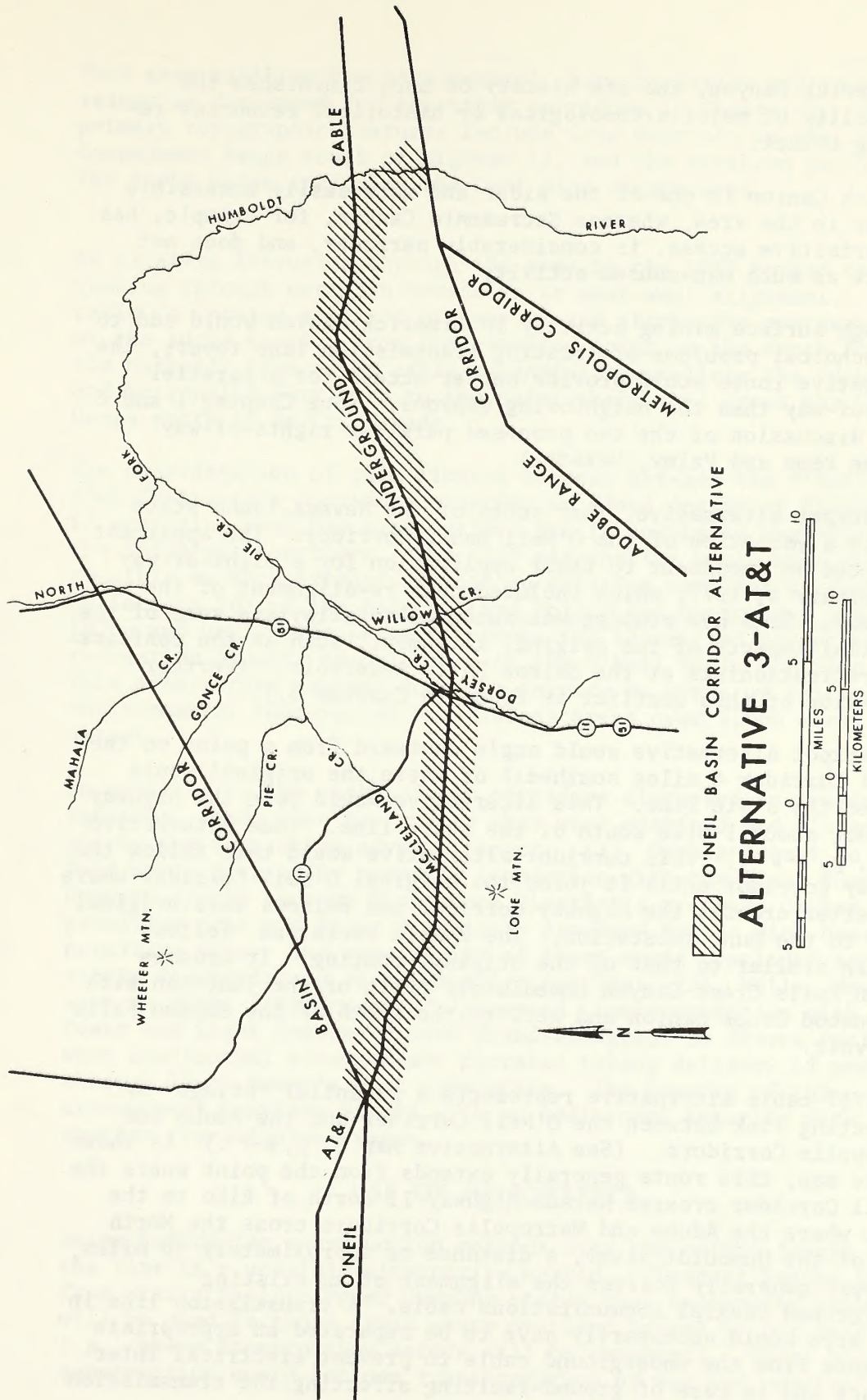
# ALTERNATIVE 1-LIMERICK





ALTERNATIVE 2-JACKPOT







in Limerick Canyon, and its history of use, diminishes the possibility of major archeological or historical resources remaining intact.

Limerick Canyon is one of the wider and more easily accessible canyons in the area, whereas Sacramento Canyon, for example, has only primitive access, is considerably narrower, and does not reflect as much man-caused activity.

Although surface mining activity in Limerick Canyon would add to the technical problems of locating transmission line towers, the alternative route would provide better access for a parallel right-of-way than the neighboring canyons. (See Chapter 1 and 6 for a discussion of the two proposed parallel rights-of-way between Reno and Valmy, Nevada.)

The Jackpot alternative, just south of the Nevada-Idaho state line is a variation of the O'Neil Basin Corridor. The applicant submitted an amendment to their application for a right-of-way on February 4, 1977, which included this re-alignment of the corridor. This new routing was intended to alleviate some of the potential impacts of the original alignment, such as the conflict with recreationists at the Salmon Falls Reservoir. (Further discussion of this conflict is found in Chapter 3.)

The Jackpot alternative would angle eastward from a point on the O'Neil Corridor 4 miles southwest of where the original route crossed the state line. This alternative would join the Highway Corridor about 1 mile south of the state line. (See Alternative Map 2, p. 8-6 .) This corridor alternative would then follow the Highway Corridor until it joins the original O'Neil Corridor where the latter crosses the Highway Corridor and follows this original route to the Hunt substation. The 7-mile variation follows terrain similar to that of the original routing. It crosses Salmon Falls Creek Canyon immediately north of the junction with Cottonwood Creek Canyon and well to the south of the Salmon Falls Reservoir.

The AT&T cable alternative represents a potential "bridge" or connecting link between the O'Neil Corridor and the Adobe and Metropolis Corridors. (See Alternative Map 3, p. 8-7 .) As shown on the map, this route generally extends from the point where the O'Neil Corridor crosses Nevada Highway 11 north of Elko to the point where the Adobe and Metropolis Corridors cross the North Fork of the Humboldt River, a distance of approximately 30 miles, and very generally follows the alignment of an existing underground coaxial communications cable. A transmission line in this area would necessarily have to be separated an appropriate distance from the underground cable to prevent electrical interference and in case of ground-faulting affecting the transmission line.



This area exhibits the same general characteristics and resource values as discussed for the other corridors in Chapter 2. The primary topographic features include Lone Mountain in the Independence Range south of Highway 11, and the northern portion of the Adobe Range including the Coal Mine Canyon area.

An existing intrusion through the area is the AT&T buried cable running through northern Nevada in an east-west alignment. This cable is located south of Highway 11 and skirts the northern end of the Adobe Range. From its crossing point on the North Fork of the Humboldt River, the cable essentially parallels the Adobe and Metropolis Corridors to the point where they cross the Snake Range north of Wells, Nevada.

The consideration of this linking segment between the O'Neil and Adobe/Metropolis Corridors provides an added degree of flexibility in analyzing possible alternatives and in combining segments of the different corridors. The AT&T alternative would make it possible to more extensively use an existing corridor as suggested by Section 503 of the Federal Land Policy and Management Act of 1976, and would also serve to reduce the identified potential recreation impacts associated with the O'Neil Basin Corridor. This alternative segment does not intrude on areas of critical environmental concern, or on roadless areas over 5,000 acres in extent.

In addition to the right-of-way corridors discussed in previous sections, there were two routes that were examined and discarded due to the cumulative adverse impact: (1) Owyhee Desert to Idaho: This route originally proposed connection with the Idaho Power Company system through Winnemucca District's proposed Owyhee Desert primitive area and Boise District's proposed Owyhee High Desert primitive area. The sensitivity of these areas precluded any viable discussion as to alternative routing: (2) Wells, Nevada east to Utah: This company's proposed interconnection with Utah Power and Light Company proved disadvantageous to Sierra Pacific when contractual arrangements dictated taking delivery of power through Idaho Power's Hunt substation. The benefit of this arrangement provides Sierra with an additional interite with another transmission system.

## USE OF HELICOPTERS

Using helicopter construction methods over the entire length of the line is a possible alternative method. (Comment letter 55 from Sierra Pacific Power Company states that helicopter methods will be used in those areas where overland travel is not feasible--i.e., where construction access will be required). Total helicopter construction would include transportation of men and required



equipment to each site and the eventual stringing of the conductor. This method would eliminate the need for construction access and would eliminate those impacts associated with construction access.



## CONSULTATION & COORDINATION

### CONSULTATION AND COORDINATION IN THE PREPARATION OF THE DRAFT ENVIRONMENTAL STATEMENT

## CONSULTATION AND COORDINATION



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# COORDINATION AND CONSULTATION





## CONSULTATION & COORDINATION

### CONSULTATION AND COORDINATION IN THE PREPARATION OF THE DRAFT ENVIRONMENTAL STATEMENT

During the preparation of the draft environmental statement the environmental staff was in contact with other federal offices, state and local agencies, interest groups, and individuals. Communication ranged from formal written comment to informal personal contact. In addition, a workshop dealing with cultural and recreational resources was held. Information concerning the proposed project, and BLM's role in the project, was published by local media.

Following is a list of agencies contacted by letter. The letter included a map of the four corridors and requested input concerning areas of jurisdiction, and possible impacts or conflicts with that agency's projects. An asterisk indicates those from whom the Environmental Coordination Staff received either a verbal or written response. Where a specific recommendation was made or conflict identified, that response has been briefly summarized.

\* Bureau of Reclamation

Letter of January 22, 1976, in review of the Tracy-Oreana 230/345 kv transmission line Environmental Analysis Record (EAR), recommends covering both segments of the transmission line (i.e., Tracy-Oreana and Oreana-Hunt) in one environmental assessment so the implications of the entire project can be understood.

\* Army Corps of Engineers

Letter of March 25, 1976, points out proposed reservoir and dam sites near two of the corridors. These have been discussed in the DES, p. 28. They also point out the requirement, after July 1, 1977, for a permit to discharge dredge or fill materials in waters where flows exceed five cubic feet per second.

\* Idaho Public Utilities Commission

Letter of April 5, 1976, recommends the Highway Corridor through Idaho. They also recommend that where the route crosses state endowment land, easements be obtained along property boundaries rather than across the parcels.



\* Idaho Bureau of Communications

Letter of March 31, 1976, points out a possible conflict with a radio and microwave communications site being considered by the state. Because of possible interference with two-way mobile radio communications from a powerline located near a highway, they recommend a route that does not parallel the highway.

\* Nevada State Historic Preservation Officer (SHPO)

The Nevada SHPO was contacted during the early stages of ES preparation. As of April 1, 1976, however, the SHPO relinquished his capacity to review proposed actions of agencies involved in public impacts or public fund expenditures in areas of potential historic or archeological significance. This relinquishment resulted from the National Park Service decision that the staff of the SHPO was ineligible to conduct surveys, make determinations or nominations to the National Register of Historic Places, or to prepare the statewide historic preservation plan. Comments on proposals must now come directly from the President's Advisory Council on Historic Preservation.

\* U. S. Forest Service

\* Bureau of Indian Affairs

\* Federal Power Commission

\* Bureau of Outdoor Recreation

Environmental Protection Agency

Bonneville Power Administration

National Park Service

U. S. Fish and Wildlife Service

Energy Research and Development Administration

\* Federal Aviation Administration

Idaho Department of Water Resources

Idaho Department of Parks and Recreation

Idaho Department of Fish and Game

\* Idaho Department of Lands

\* Idaho Department of Transportation

\* Idaho Public Utility Commission

Nevada Division of Parks

\* Nevada State Department of Fish and Game

\* Nevada State Historical Society

\* Elko County Planning Commission

Lander County Planning Commission

Twin Falls County Commissioners

Jerome County Commissioners

Humboldt County Planning Commission

Pershing County Planning Commission

Eureka County Planning Commission

\* Nevada Power Company

\* Wells Rural Electric Company

In addition, informal contact was made with the following groups. A double asterisk shows those from whom written comments were



received. Where specific recommendations were made, or questions raised, these letters have been summarized. (The summarized letters were received in response to a request for review of the Tracy-Oreana EAR.)

**\*\* The Toiyabe Chapter of the Sierra Club**

Letter of February 17, 1976, recommends energy conservation measures as a means of reducing growth of energy demand, questions need for project, recommends the Highway Corridor, recommends the ES cover the entire transmission line from Tracy, Nevada, to Hunt, Idaho.

**\*\* The Wilderness Society**

Letter of February 16, 1976, recommends the ES include the Tracy-Oreana segment, recommends the Highway Corridor, questions assumption by the applicant of increased population and per capita use of electrical power in the load area, and requests fuller discussion of this question, questions decision to not include Tracy-Oreana segment in the ES being made before the final EAR on this portion was completed and printed.

**\*\* Interested Citizen - Marjorie Sill**

Letter of February 16, 1976, questions necessity for the intertie, recommends the Highway Corridor, recommends the ES cover the entire transmission line (i.e., include the Tracy-Oreana segment).

**\*\* Idaho Power Company**

**\*\* Department of Anthropology, Idaho State University, Pocatello**  
Twin Falls County Tax Officer  
Jerome County Tax Officer  
Soil Conservation Service  
U. S. Weather Service  
Nevada State Tax Commission  
Nevada State Division of Water Resources  
Nevada State Environmental Protection Services  
City Clerk's Office, Wells, Nevada  
Lovelock Chamber of Commerce  
Winnemucca Chamber of Commerce  
Elko Chamber of Commerce  
Office of Personal Relations, Jackpot, Nevada  
Regional Planning Commission of Reno, Sparks, and Washoe County  
Cooperative Extension Service, Elko  
University of Nevada, Reno:  
Division of Agricultural and Resource Economics  
Department of Renewable Natural Resources  
Division of Range Resources  
The Northern Nevada Native Plant Society



## COORDINATION IN THE REVIEW OF THE DRAFT ENVIRONMENTAL STATEMENT

Requests for comments on the DES were made of the following interest groups and agencies. (An asterisk indicates those who responded; a complete list of respondents appears in Table 9-1, p. .)

### Congressional Delegation, Nevada and Idaho:

Senator James McClure, Idaho  
Senator Frank Church, Idaho  
Representative George Hansen, Idaho  
Representative Steve Sims, Idaho  
Senator Howard Cannon, Nevada  
Senator Paul Laxalt, Nevada  
Representative James Santini, Nevada

### Federal:

\* Advisory Council on Historic Preservation  
Department of Agriculture -  
\* Forest Service  
\* Soil Conservation Service  
\* Rural Electrification Administration  
Department of Defense -  
\* Army Corps of Engineers  
Department of Health, Education and Welfare  
Department of Housing and Urban Development  
Department of the Interior -  
\* Bonneville Power Administration  
Bureau of Indian Affairs  
\* Bureau of Outdoor Recreation  
\* Bureau of Reclamation  
\* National Park Service  
\* U. S. Fish and Wildlife Service  
U. S. Geological Survey  
Department of Transportation  
\* Environmental Protection Agency  
\* Energy Research and Development Administration  
\* Federal Aviation Administration  
\* Federal Highway Administration  
Federal Energy Administration  
\* Federal Power Commission  
\* Pacific Northwest River Basin Commission

### State:

Office of the Governor, Idaho  
Office of the Governor, Nevada  
Idaho State Historic Preservation Officer  
Nevada State Historic Preservation Officer  
\* Nevada State Museum  
\* Nevada State Clearinghouse (25 copies) - distribute copies  
to the State agencies



Nevada Historical Society

\* Idaho State Clearinghouse (15 copies) - distribute copies to  
Idaho State agencies

Idaho State Public Utilities Commission

Idaho State Department of Fish and Game

Idaho Department of Public Lands

Idaho Department of Parks

Idaho Department of Transportation

Tahoe Regional Planning Agency

Local:

Jerome County Commissioners and Planning Commission

Twin Falls County Commissioners and Planning Commission

\* Elko County Commissioners and Planning Commission

Eureka County Commissioners and Planning Commission

Lander County Commissioners and Planning Commission

Humboldt County Commissioners and Planning Commission

Pershing County Commissioners and Planning Commission

Churchill County Commissioners and Planning Commission

Lyon County Commissioners and Planning Commission

Esmeralda County Commissioners and Planning Commission

Mineral County Commissioners and Planning Commission

Nye County Commissioners and Planning Commission

Storey County Commissioners and Planning Commission

Carson City Board of Supervisors and Planning Commission

Washoe County Commissioners

Regional Planning Commission of Reno, Sparks, and Washoe County

Washoe Council of Governments

Carson River Basin Council of Governments

Interest Groups:

\* Sierra Club, Idaho and Nevada

The Wilderness Society

\* Nevada Outdoor Recreation Association

Foresta Institute

League of Women Voters, Idaho and Nevada

University of Nevada, Reno

Idaho State University, Pocatello

Copies of the draft environmental statement were available for  
public review at the following locations:

Bureau of Land Management Offices -

Washington Office of Public Affairs

18th and C Streets

Washington, D. C. 20240

Idaho State Office

Room 398 Federal Building

550 West Fort Street

Boise, Idaho 83724



Nevada State Office  
Room 3008 Federal Building  
300 Booth Street  
Reno, Nevada 89509

Burley District Office  
200 South Oakley Avenue  
Burley, Idaho 83318

Elko District Office  
2002 Idaho Street  
Elko, Nevada 89801

Battle Mountain District Office  
North 2nd and South Scott Streets  
Battle Mountain, Nevada 89820

Carson City District Office  
801 N. Plaza Street  
Carson City, Nevada 89701

Las Vegas District Office  
4765 Vegas Drive  
Las Vegas, Nevada 89102

Winnemucca District Office  
705 East 4th Street  
Winnemucca, Nevada 89445

#### Public Libraries -

Carson City Public Library  
900 N. Roop  
Carson City, Nevada 89701

Reno Central Library  
301 S. Center Street  
Reno, Nevada 89501

Humboldt County Library  
315 South Humboldt  
Winnemucca, Nevada 89445

Lander County Library  
315 South Humboldt  
Battle Mountain, Nevada 89820

Elko County Library  
720 Court Street  
Elko, Nevada 89801



Clark County Library  
1401 E. Flamingo Road  
Las Vegas, Nevada 89109

Churchill County Library  
553 South Maine Street  
Fallon, Nevada 89406

Pershing County Library  
1125 Central Avenue  
Lovelock, Nevada 89419

The public comment period was scheduled to provide the concerned publics the opportunity to review and offer comments on the adequacy of the draft environmental statement. The draft ES was filed with CEQ and made available to the public on October 15, 1976. The notice of availability was published in the October 18, 1976 issue of the Federal Register (Vol. 41, No. 202). The notice announced a public review period ending December 10, 1976.

After publication of the notice of availability, over 250 copies of the draft ES were distributed. Reading copies of the draft ES were made available at the BLM offices and public libraries listed on the preceding page.

In addition to the Federal Register notice, a news release was mailed, on the same date, from the Nevada State Office, Bureau of Land Management to the newspaper, radio, television stations, and interest groups within Idaho and Nevada.

A public hearing was held at the Pioneer Inn, Reno, Nevada on November 16, 1976. There were six respondents: A) Mr. Max Jones, Managing Engineer, Sierra Pacific Power Company; B) Mr. Harry Erickson, SE&A Consulting Engineers (the applicant's environmental consultant); C) Mr. Rory Hogen, Friends of Nevada Wilderness; D) Mrs. Marjorie Sill, Nevada Outdoor Recreation Association; E) Mr. Dennis Ghiglieri, Sierra Club; and F) Mr. I. J. Sandorf, Private Citizen. Comments and responses from the public hearing are included in the following comment and response section. They are indicated by a letter designation (A-1, D-2) vice numerical designation (10-1) in the following comment and response section.

During the public comment period fifty-five (55) documented comment letters, including those from the BLM, were received. The relevant letters with an index have been included in Appendix L of the final ES. All written comments have been included in the final ES and sent to the Director of the BLM and the Council on Environmental Quality for review and will also be available for public inspection at the State Director's Office, Bureau of Land



Management, Room 3008, Federal Building, 300 Booth Street, Reno, Nevada. Transcripts of the public hearing are also available for review at the above address.

All comments were reviewed to determine if they met the required criteria for response - i.e., they had to discuss the adequacy of the draft ES. Comments which presented new data, questioned facts and/or analyses, and raised questions or issues bearing directly on the draft ES were fully considered and evaluated. These comments were assigned to the environmental staff analysts for evaluation and subsequent required changes or insertions in the text of the draft ES. Similar comments which have been made by different organizations were fully responded to once, and the reader referred back to the initial response within the same section in answer to all subsequent similar comments.

In the following section, comments are numbered according to the control number of the letter in which they appeared (46-1). A complete list of respondents and the areas of the draft statement discussed appears in Table 9-1 below.

TABLE 9-1 COMMENT LETTERS RECEIVED AND AREAS OF CONCERN		DATE RECEIVED	AIR QUALITY	WATER	TOPOGRAPHY/GEOLOGY/ MINERAL RESOURCES	SOILS	VEGETATION	WILDLIFE	LAND STATUS	SOCIAL-ECONOMIC	VISUAL RESOURCES	HISTORICAL/ARCHEOLOGICAL VALUES	RECREATION	ECOLOGICAL INTERRELATIONSHIPS	AGRICULTURE	ALTERNATIVES	OTHER AGENCY PROJECTS	COMMUNICATIONS	EDITORIAL	GENERAL	MITIGATING MEASURES	FEDERAL LAND POLICY AND MANAGE- MENT ACT OF 1976, Sec. 201, 303, and 603	LAND REQUIREMENTS AND SURFACE DISTURBANCE	IMPACTS (GENERAL)
1	Pacific Northwest River Basins Commission	10/27/76																						
2	Rural Electrification Administration (1)	11/2/76																						
3	Federal Aviation Administration (1)	11/4/76																						
4	BLM, Carson City DO	11/5/76																						
5	Bureau of Outdoor Recreation	11/11/76																						
6	Rural Electrification Administration (2)	11/16/76																						
7	Federal Highway Administration	11/19/76																						
8	Mr. Steven L. Cousins	11/19/76																						
9	Soil Conservation Service	11/25/76																						
10	Nevada State Museum	11/25/76																						
11	Elko County Commissioners (1)	11/30/76																						
12	Mr. Rory Hogen	12/1/76																						
13	U.S. Army Corps of Engineers	12/3/76																						
14	Mr. Don M. Deft	12/3/76																						
15	Southern Pacific Land Company	12/3/76																						
16	Advisory Council on Historic Preservation	12/3/76																						
17	Ms. Rose Strickland	12/9/76																						
18	Energy Research and Development Administration	12/9/76																						
19	Sierra Club	12/10/76																						
20	Airways Engineering Corporation	12/10/76																						
21	Mr. Phillip Farrell	12/10/76																						
22	Union Pacific Railroad	12/10/76																						
23	Nashoe County Game Management Board	12/10/76																						
24	Nevada Mining Association	12/10/76																						
25	Nevada Outdoor Recreation Association	12/13/76																						
26	Ms. Tina Nappe	12/13/76																						
27	Dr. Grant T. Kein	12/13/76																						
28	Mr. Dan S. Leeth	12/13/76																						
29	Federal Aviation Administration (2)	12/13/76																						
30	Idaho State Historical Society	12/13/76																						
31	Nevada Wildlife Federation	12/13/76																						
32	Sierra Pacific Power Company (SPPCo) (1)	12/13/76																						
33	SPPCo. (2)	12/14/76																						
34	Idaho Fish and Game Department	12/14/76																						
35	Bureau of Reclamation	12/14/76																						
36	Forest Service (1)	12/14/76																						
37	National Park Service	12/14/76																						
38	Private citizens	12/15/76																						
39	Idaho State Clearinghouse	12/16/76																						
40	Forest Service (2)	12/16/76																						
41	BLM, Boise DO	12/16/76																						
42	BLM, Boise DO	12/16/76																						
43	Fish and Wildlife Service	12/21/76																						
44	Elko County Commissioners (2)	12/21/76																						
45	Environmental Protection Agency	12/21/76																						
46	BLM, Winnemucca DO	12/27/76																						
47	T. Lazy S Ranch	1/7/77																						
48	Nevada State Clearinghouse	1/12/77																						
49	Federal Power Commission	1/13/77																						
50	Chilton Engineering	1/13/77																						
51	Northwest Farm Management, Inc.	1/18/77																						
52	Lander County Fair and Recreation Board	1/18/77																						
53	Nevada Fish and Game Department	1/19/77																						
54	SPPCo. (3)	2/7/77																						
55	SPPCo. (4)	2/23/77																						



## COMMENTS AND RESPONSES

### 1. Climate

No comments received.

### 2. Air Quality

Comment 32-7:

The statement "Considerable quantities of particulate matter are likely to be produced from tower site clearing operations and tower construction road improvements, new access construction, and general vehicular traffic along unpaved roads" appears to be a subjective statement and contradicts the statement made in the closing sentence of that same paragraph. It would seem appropriate at this point to re-emphasize the statement made in Section II, Page 27, Air Quality: "The largest source of pollutants over much of the area is naturally generated particulate matter from dust storms." In the second paragraph in this same Section, the statement, "Improvement and construction of access roads will undoubtedly draw general vehicular traffic to the area, further aggravating the dust situation."

Response: The text has been changed to clarify the extent of the impact. (See FES page 2-3.)

Comment 45-3:

The existing air quality in the Reno-Carson City-Tahoe area should be represented, as this area is the principle electrical consumer and since air quality in that area may be impacted by secondary growth caused by increased availability of electrical power (Page 134).

Response: Additional air quality data has been placed in FES Appendix B, and referenced in Chapter 2, Existing Environment. A section on secondary impacts has been added to the Air Quality section of Chapter 3.

Comment 48-6:

- a) In Chapter III "Air Quality", a benefit may be to reduce or delay the need for additional fossil fuel generating capacity."
- b) An adverse consideration by the O'Neil corridor would be the opening of more area to off-road vehicle (ORV) access from the maintenance road. This may require additional BLM manpower to enforce needed ORV restriction.



Response: a) This impact was not added to the text for two reasons: Sierra Pacific Power Company plans to build a coal fired power plant in Northern Nevada in the near future, and the power brought into the State via the proposed transmission line would still be generated by a fossil-fuel fired plant, albeit in another state. b) This point is addressed briefly in the Air Quality section of Chapter 3, DES p. 110, and further addressed in the Vegetation section, Chapter 5, DES p. 176-177.

### 3. Water Resources

Comment 32-8:

#### SECTION III ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION, WATER

Of the twenty-one (21) live streams crossed by the O'Neil Corridor, twelve (12) streams have existing bridges or culverts in the immediate vicinity of the transmission crossing, thus eliminating the necessity for any construction activity to take place in the stream bed or riparian zone. A stream crossing bridge inventory has not been made on the three (3) remaining corridor alternatives.

Response: Text revised, FES p. 3-3.

Comment 39-3:

3. General Comment: There is insufficient detail on the disturbance that would be caused by stream crossings. When this information is available, the department will evaluate and comment on this aspect of the proposal.

Response: The disturbance at any of the small stream crossings (see FES Chapter 3, Water) would be minimal due to: 1) the types of construction methods to be used, 2) the mitigating measures that will be required by the Bureau of Land Management, and 3) applicant-committed mitigating measures to minimize soil and vegetative disturbance (see FES Chapter 4).

Comment 47-3:

Furthermore, since much of the land along the Humboldt River and through the Rock Creek flood plain is subject to seasonal flooding and is normally impassable during up to five months of the year, construction costs for heavier tower footings, roadway and drainage facilities, plus higher maintenance costs associated with such conditions will add significantly to these higher power costs.



The heavy vehicular traffic associated with power line construction plus the need to construct all weather roads within the Humboldt flood plain will have a detrimental affect on forage production to a much greater extent than the relatively narrow right-of-way upon which the grazing impact estimated on Page 128 of the Draft Environmental Statement was apparently based. This area is also subject to sporatic uncontrolled flooding from Rock Creek and to a secondary degree from Boulder Creek.

Response: The susceptibility of the corridors to flooding is discussed in FES Chapter 3, Accidents and Catastrophes. Sierra Pacific Power Company has stated that they would not need any permanent all-weather roads to maintain the transmission line. Construction of the line through any flood-prone areas would only occur at times when the soils are relatively dry and firm so as to minimize erosion-related impacts.

#### 4. Topography/Geology/Mineral Resources

Comment 32-9:

SECTION III, Page 112, 113 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION - TOPOGRAPHY

The draft EIS fails to define or identify areas of "steep terrain". In the interest of accuracy, an analysis was made utilizing quantities shown on the surface disturbance table contained in an earlier section of this report.

CORRIDOR	GROUND SLOPES IN EXCESS OF 20% AS A % TO TOTAL
O'Neil	3.66%
Highway	1.29%
Adobe	2.76%
Metropolis	2.10%

Response: Text revised, FES p. 3-5.

#### 5. Soils

Comment 32-3:

"In reference to Soil Group Map, Page 41, and Erosion Hazard Map, Page 43, large areas are shown to have severe to moderate erosion hazard, due apparently to the identification of certain soil



groups within particular geographic areas. No consideration was given to the fact that when these soil groups lie on flatter slopes, they would exhibit a considerably lower tendency to erode. Reference is made in the text to the effect that vegetation will offset the tendency for these soils to erode. However, the Erosion Map from which later (Section III) impact conclusions were drawn, did not take either slope or vegetation into consideration. Comments relative to the application of this Erosion Hazard Map, DES Page 43, will occur during the Section III Environmental Impact Review of this report."

Response: Text revised, FES p. 2-8. Erosion hazard is based on projected damage (wind and water erosion) to the soil after vegetation cover is reduced or destroyed.

Comment 32-6:

"All soil types along the entire corridor route will not be disturbed to the full depth of one foot".

Response: DES page 115 lists values for soil displacement or disturbance. Soil disturbance to a one foot depth is actually a possibility in some areas, and a probability in other areas. The depth of disturbance is dependent on several factors including intensity of vehicle travel (in this case), soil texture, structure depth, moisture content, etc. Some areas may be disturbed deeper than one foot. This figure of one foot was used as an example to illustrate the possible damage. Table 3-2 and the accompanying narrative illustrate possible damage, and is so inferred.

Comment 48-1:

One problem with the clearing of construction staging areas and access roads even if they are not used for maintenance of the line is that once the 10-foot wide path has been cleared during the summer months, the path may be widened through blowing soil depositing on the vegetation causing reduced growth. This would require a longer period of time for the new growth to cover the area, depending on the soil condition and location.

Response: The author qualified the possible adverse impact with, "soil condition and location," and he could have added, "soil kind." Wind erosion would be a problem mainly on coarse and medium textured soils, where annual precipitation is low.



## 6. Vegetation

Comment 6-2:

Page 20, next to last paragraph: If any fertilizers, insecticides, etc., are used during rehabilitation of disturbed areas, they must be approved by EPA and USDA. It is recommended that disturbed areas be reseeded with native vegetation. The Soil Conservation Service should be consulted before taking any action on reestablishing a vegetative cover.

Response: Reseeding is discussed in Chapter 4, Mitigating Measures in DES p. 164 and in Appendix E, p. 221. It is stated there that the seed mix would be determined by BLM. The flexibility thus maintained would allow for a variety of possible revegetation measures. For example, portions of the corridors under study cross existing crested wheatgrass seedings. (Information on reseeded was derived from a variety of published research by Universities, the Soil Conservation Service, Forest Service, BLM, and others.)

Comment 25-3:

No survey has been made of the plants along the four routes nor of the non-game species of animals.

Response: Data presented in the DES came from field reconnaissance of the four corridors, resource inventories compiled by the BLM Districts crossed by the corridors, and from published sources such as the Nevada State Engineer's Water for Nevada, Vol. 6, Wildlife.

## 7. Wildlife

Comment 6-4:

Page 124, third paragraph, last sentence: Are there any known peregrine falcon or southern bald eagle nests in the vicinity of the four corridors? If there are they should be indicated and mitigative measures should be presented.

Response: There are no bald eagle or peregrine falcon nesting sites within the study area. The southern bald eagle is recognized as occurring only south of the 40th parallel. (See Threatened and Endangered Species section of Chapter 2.)



Comment 18-1:

In response to your letter dated October 15, 1976, requesting comments on the subject action, the Nevada Operations Office finds the document acceptable as written. We did notice that threatened and endangered wildlife species, while identified and briefly assessed, have not been identified and assessed as required by Federal Law (See Federal Register of July 1, 1975, pages 27823 - 27924). You might want to review that section.

Response: The Threatened and Endangered species section of Chapter 2 has been revised in the final statement.

Comment 25-3:

No survey has been made of the plants along the four routes nor of the non-game species of animals.

Response: Data reflecting wildlife habitat, including non-game species were utilized in preparation of the environmental statement. Data sources included BLM Districts Unit Resource Analyses; Water for Nevada, Report No. 6; and mammal and bird field guides depicting range. A field survey of non-game species of animals was not needed, as the existing data was adequate to determine levels of potential impacts.

Comment 32-8:

### SECTION III ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION, WATER

Of the twenty-one (21) live streams crossed by the O'Neil Corridor, twelve (12) streams have existing bridges or culverts in the immediate vicinity of the transmission crossing, thus eliminating the necessity for any construction activity to take place in the stream bed or riparian zone. A stream crossing bridge inventory has not been made in the three (3) remaining corridor alternatives.

Response: A stream-crossing bridge inventory for all corridors is shown in the water section of FES Chapter 2.

Comment 34-1:

Page 52, Paragraph 4: Critical antelope winter ranges are not, but should be, included. Among these should be listed the area between Brown's Bench and Salmon Falls Reservoir which winters approximately 80 antelope. This is the only herd in the area between Twin Falls and the Nevada-Idaho border and is worthy of recognition. The area should also appear on the Big Game and Fisheries Map following page 54.



Response: The presence of critical antelope winter habitat has been incorporated into the Wildlife section of FES Chapter 2 - Existing Environment.

Comment 34-2:

Because golden eagles are common in the area year around, we recommend that precautions be taken to prevent their electrocution. This may involve special spacing of conductors and the construction of special hunting perches and nest platforms. The Boise District of the Bureau of Land Management and the Idaho Power Company should be contacted for specifications.

Response: See DES, page 122 - Spacing of conductors is wide enough to preclude electrocution of eagles.

Comment 43-1:

Page 54, last sentence. The bald eagle is mentioned as a raptor wintering in the study area. It should be noted that this is currently under consideration for possible inclusion on the Secretary of the Interior's list of endangered species. This might also be mentioned on page 60 under "Threatened and Endangered Species."

Response: This comment has been incorporated into the text, see FES Chapter 2, Wildlife.

Comment 43-2:

Page 121, Wildlife, last paragraph. "...the potential loss of 290 to 400 acres of big game habitat..., will not significantly affect the overall mule deer or antelope populations..." Nevada's mule deer populations have been declining for the past several years. The narrative says that the proposed corridor would require construction of 286 miles of new roads. Such additional access and associated human activities into remote areas could cause further decreases in deer populations.

Response: Additional construction access with associated human activities may cause disturbance to wildlife populations particularly in the critical habitat areas where big game population concentrations occur, this fact has been incorporated into Chapter 2 of the final statement.

Comment 43-3:

Page 124, Threatened and Endangered Species. This section should mention that the Lahontan cutthroat trout, Salmo clarki henshawi, occupies Marys River and tributaries. Without adequate safe-



guards, soil disturbances associated with transmission line construction through O'Neil Basin could cause stream deterioration and increased bank erosion and turbidity, thereby adversely affecting this threatened species' habitat. The text should clearly address the need to prevent deterioration of this environment and how it would be accomplished with the project.

Response: The existing habitat section has been rewritten to more adequately cover the habitat of the Lahontan cutthroat trout within the study area. A comprehensive analysis of the potentially affected site (prepared for the applicant by Thomas J. Trelease, Fisheries Consultant) is included in Appendix F of the final statement.

Comment 43-4:

Page 124, Threatened and Endangered Species, last sentence. Peregrine falcons and bald eagles may also be impacted by increased human activities brought about by improved access to their wintering areas. Harassment to these birds during stress periods could prove detrimental. This possibility should be recognized in the document and procedures to meet the requirements of the Endangered Species Act of 1973 addressed.

Response: Improved access would be limited only to that construction access necessary to build the transmission line. Existing roads would be utilized as much as possible. Construction access roads would be rehabilitated and "put to bed" to the extent practical. An analysis of needed construction access shows it to be at the higher elevations which are generally inaccessible during the winter months due to snow or poor road conditions.

Comment 43-5:

Page 181, Chapter IV, Mitigating Measures. Although some excellent measures are discussed, some of this chapter seems vague or unrelated to mitigation. If possible, inclusion of more specific measures would be desirable.

We suggest that regardless of the route selected, the following measures should be considered for inclusion in project plan. No construction activity should be conducted within or near sage grouse critical habitat, waterfowl nesting areas, raptor eyries, deer fawning areas, or antelope kidding grounds during periods of use. Removal of riparian vegetation should be kept to a minimum. If the O'Neil Basin corridor becomes the selected route, all transmission facilities in areas of "severe erosion hazard" should be installed and maintained by helicopter. This would eliminate the possibility of increased human disturbances in critically sensitive wildlife areas and protect water quality.



Response: The suggested measures have been incorporated as mitigating measures in Chapter 4 of the final statement.

Comment 43-6:

Page 161, paragraph 3. The text says that "specific measures... will be incorporated as stipulations to BLM grants of right-of-way..." What are these stipulations?

Response: Specific measures which incorporate the mitigating measures into stipulations to the right-of-way grant would be determined after the final decision has been made. Upon completion of the environmental statement process, a final decision would be made whether or not to grant a right-of-way. Specific stipulations would then be incorporated in the right-of-way grant. These stipulations would incorporate the specific mitigating measures covered in this final environmental statement.

Comment 43-7:

Page 162, paragraph 2. We suggest that sessions to identify "environmentally sensitive areas" should be accomplished prior to completion of the final environmental statement and procedures and stipulations required to protect the environment delineated.

Response: "Areas of critical environmental concern" (environmentally sensitive areas) have been tentatively inventoried as directed in section 201(a) of the Federal Land Policy and Management Act of 1976. These areas are identified in the land use section of Chapter 2, p. 2-37. Stipulations to protect the environment delineated would be developed after a final decision has been made. (See response to comment 43-6, above.)

Comment 43-8:

Page 162, last paragraph. This paragraph appears to deal with standard operating procedures relating to road construction and maintenance rather than with mitigating or environmental protection measures.

Response: This paragraph is procedural, due to the lack of a site-specific right-of-way application, which would be premature and costly at the time of application. Specific sites would be determined after a final decision is made.

Comment 43-9:

Page 165, Wildlife. The discussion of means to assure protection of hawks, owls, and eagles satisfactorily addressed need for compliance with Federal and State laws. However, we suggest com-



ments on habitat loss reduction or damage prevention measures would be desirable.

Response: With the application of the mitigating measures as they relate to raptors, direct impacts to raptor nesting habitat would be avoided. Indirect impacts to raptors may occur due to a reduction of prey-species habitat and subsequently as a reduction in the prey-species population base. Mitigating measures have been incorporated to reduce disturbance to vegetation or restore disturbed vegetative areas which constitute habitat for various prey species.

Comment 43-10:

Page 165, Wildlife, last sentence. "Protection of the Lahontan cutthroat trout will be accomplished by adherence to the previously listed mitigating measures." These measures do not appear adequate for habitat protection of this threatened species. We urge the project to be designed to safeguard this fish by preventing any deterioration of its aquatic environment.

Response: The mitigating measures included in the report by Thomas J. Trelease, FES Appendix F (contracted for and submitted by Sierra Pacific Power Company), have been made a part of Chapter 4 of the final statement. These site-specific measures are considered sufficient to provide for habitat protection of this threatened species.

Comment 43-11:

Page 172, fourth paragraph. The statement "Impacts to Wildlife will occur mainly during the construction phase..." is incorrect. Project impacts on wildlife could continue to occur for an extended period. Soil erosion, loss of vegetation, and increased human activities along the route will affect wildlife for many years to come.

Response: Impacts to wildlife which cannot be mitigated are pointed out in Chapter 5 of the final statement, continuing or long-term impacts (as indicated) are included in the discussion in this chapter.

Comment 45-4:

However, given that one of the objectives of the Federal Water Pollution Control Act, as amended, is to make all of the nation's significant waterways fishable and swimmable, we think that it would be appropriate for this statement to attempt to quantify the effects of powerline construction on anadromous and resident fisheries. It would also be appropriate for BLM to condition the



right-of-way grants of all stream crossing procedures and to ensure that all equipment used are subject to the approval of the appropriate Fish and Game agencies at the State and Federal level.

Response: There are no anadromous fish in the study area. Stream crossings have been further studied to determine existing roads crossings, either bridge or culverts, in the near vicinity of the corridor. This data is reflected on FES p. 3-3. Stipulations to the right-of-way grant would be developed from the mitigating measures to protect streams and waterways.

Comment 47-8:

From a wildlife standpoint the Draft Environmental Statement fails to mention the substantial permanent deer population residing in the meadows along the Humboldt. This wildlife plus pheasant, partridge and duck residing in the same area make the flood plains of the Humboldt among the most intensive wildlife areas of the state.

Response: This additional data has been incorporated into the wildlife section of FES Chapter 2.

## 8. Land Status

Comment 32-11:

### SECTION III, Page 124 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION LAND USES AND OWNERSHIP

No attention is addressed to the fact that certain lands lying along the major highways, railroads, and being situated near existing population centers have a higher developmental potential than other agricultural lands. While these lands may be presently used for agricultural cattle-grazing, there is a potential for a more intensive use, such as urban expansion, industrial, or crop farming. Generally speaking, overhead electric transmission lines conflict with those more intensive land uses, and given a route location choice it is wise and economic to avoid those areas.

Response: Along the corridors under consideration there are no extensive uses other than those mentioned in the DES. However, if a transmission line were built along one of the areas mentioned above, the potential for land-use change would exist. If the areas considered were currently devoted to intensive use, then



the statement that placement of the transmission line would involve land-use conflict would be correct, and it would be desirable to avoid these areas. This is not presently the case.

Comment 51-4:

Regardless of the Corridor ultimately selected or the ownership of the lands affected, it is felt that insufficient consideration has been given to evaluating both immediate and future impact. In reviewing the Draft Statement, especially those parts dealing with construction requirements, access road requirements, actual degree of soil disturbance, and rehabilitation procedures, there is an underlying implication that there was only a small degree of field verification of facts presented and conclusions drawn. In general, it is felt that too many of the conclusions drawn were based on incomplete facts and theoretical textbook assumptions, rather than practical experience and actual verification of physical features with the four Corridors.

We feel that permanent and damaging impact upon the land both during the construction period and throughout the life of the line will be far more extensive than has been implied. Again, we urge that before any decisions are made, more extensive and comprehensive physical evaluations be made in each Corridor prior to developing conclusions and comparisons.

In the case of all three Corridors crossing over deeded range land owned by the ranch, damage to surface areas disturbed will be extensive and, for the most part, permanent. This is because of low rainfall, rough terrain for either construction or access or both, and a highly fragile native forage ecosystem. Because of this, we feel that any easement condemned over deeded land owned by the ranch will be far more damaging to the land surface than has been implied by the Draft Statement for this type of range land. This is influenced by the permanency of the damage, which we estimate to be total. The influence of the undesirable forage which will ultimately establish itself along parts of the easement will influence productivity of adjoining deeded range land. This does not even consider the extensive damage caused by unauthorized off-road vehicles in the entire area over the 50-year projected life of the transmission line.

Response: Analysis of impacts associated with construction was carried out by the impact statement team with input from the applicant and from SE&A Engineers, the applicant's consultant. The construction crews would be required to travel overland where possible, rather than blading roads, as described in the mitigating measures section of the draft statement (Chapter 4). Specific stipulations to reduce surface disturbance would be attached to the right-of-way grant. These measures would be defined on



the ground by discussions between the BLM compliance officer and the contractor. Estimations of surface disturbance may be found in Table 1-1 in Chapter 1, in the comment letter from Sierra Pacific Power Company (letter No. 32), and in the response to those comments. BLM agrees that there is potential for permanent damage on all of the corridors. For an expanded discussion of alternate routing, refer to Chapter 8 of the final statement.

## 9. Social-Economic Factors

### Comment 12-1:

The other reason is that the Highway route will cost too much. The difference in total cost between the two lines appears to be insignificant, and an interceptor line to Elko and Wells from the O'Neil line would probably make it cost more. The main problem seems to be in acquisition of private property. According to your report, acquisition will be needed along 33% of the O'Neil corridor, and 52% of the Highway corridor (p. 142). Do your total cost estimates reflect this difference? This isn't clear in the EIS. Are costs of revegetating and covering unused access roads, as well as upkeep of access roads used in the future included in the total cost? The cost of the interceptor line was also left out. These costs could make a big difference in which route is best.

Response: The DES does not suggest corridor preference based on considerations of the cost differential. If an interceptor line is built, its cost would be absorbed by the company or companies concerned (Wells Rural Electric, Nevada Power), not by the applicant. Original and subsequent cost figures obtained from the Sierra Pacific Power Company are "cost per mile," which includes material, labor, easement acquisition, and road requirements. The percent of private property indicated in the DES is used to illustrate the different amounts of private land to be crossed, e.g., the 31.5 million dollar amount for the O'Neil corridor reflects the acquisition costs over 33 percent of the route. The road and line upkeep and maintenance costs were not calculated.

### Comment 24-1:

Indeed, it would be difficult to justify any of the alternate routes with the stated \$10-million added cost unless one were to assume that all of Nevada's remote areas are to be marked for non-development - a policy that would not only be in direct conflict with the above cited Public Law 91-631, but would also be in direct opposition to the Public Land Law Review Commission study and recommendations that public lands be retained and managed under a multiple use policy.



Response: The justification of one corridor over another based primarily on monetary considerations is not the purpose of the DES. The fact that electrical power can serve the mining potential is an important factor, but mining potential is a characteristic of the land in general and one particular route cannot be justified solely on the basis that it can better serve mining interests or potential along its traverse. The statement that cost differentials between corridors is in some way equated with an assumed policy of marking Nevada's remote areas for "non-development" is incorrect, in addition to being in conflict with the Public Law mentioned.

Comment 25-5:

The O'Neil Basin route seems to have been selected solely on the basis that it would be shorter and therefore less expensive to build. However, no statistics are given as to the projected cost of servicing the four alternatives. It may be that the O'Neil Basin route could prove to be the most costly over a 20 year period and the Highway Route the least costly. Certainly this aspect should be examined.

Response: Maintenance and operation costs were not considered in the draft statement due to the fact that only the general cost comparisons of the corridors were emphasized. Analysis on corridors and their alternatives must be primarily designed around environmental considerations, not those of cost. On the surface it appears that the Highway route may be the most desirable route in regard to access and servicing, but the increased cost of the Highway Corridor over the O'Neil route would most likely preclude benefits related to servicing and maintenance due to the nature and reliability of high-voltage transmission lines. Power companies consistently maintain that servicing and maintenance after construction is minimal, and that placing lines in remote areas may, in fact, cut maintenance costs due to their having less potential for vandalism.

Comment 32-5:

SECTION II, Page 90      DESCRIPTION OF THE ENVIRONMENT, ATTITUDES  
AND EXPECTATIONS

The last paragraph on this page contains a continuing discussion on local attitudes: "Since the traverse of the proposed electrical transmission line crosses lands predominantly devoted to livestock grazing, 97% Nevada, 82% Idaho, attitudes of the rural citizenry toward the action have been negligible."

There has been no attempt at obtaining "local" public input concerning attitudes towards the location of three of the four



transmission line alternatives studied in the draft EIS. Areas of early public concern during the preparation of the S E & A Constraint Study were, the area north and east of Battle Mountain from Stony Point through Boulder Valley, the area west of Elko from the east end of the Carlin Tunnel to the Airport, the area south of Interstate 80 from the South Fork of the Humboldt River to Wells, the foothill area north of Elko and south of the Adobe Ranch.

Response: The release of the Draft Environmental Statement is for the purpose of obtaining input from local individuals and groups and from State/Federal agencies. Release of the draft was accompanied by letters to concerned agencies and individuals with attached maps. Public information notices and newspaper articles have appeared concerning the DES in the local communities involved. A public hearing was held in Reno, Nevada, on November 16, 1976 for the purpose of obtaining public comment.

Comment 32-13:

SECTION III, Page 136 ECONOMICS & SOCIAL CHARACTERISTICS

This comment has reference to the note regarding the water service area of Sierra Pacific Power Company and its effect on growth.

The company has a water service area which has been designated and certificated by the Nevada Public Service Commission and the company is obligated to serve customers within that area with municipal and industrial water.

The water service area encompasses all of the cities of Reno and Sparks and contiguous Washoe County land with the exception of a part of the City of Reno in the Reno-Stead area in Lemmon Valley. The area includes land where water is being used for agricultural purposes as well as municipal and industrial use and it is estimated that the agricultural water will be changed to municipal and industrial use as the land use changes. Thus, providing adequate water supply for the land within the boundaries. Maintenance of the boundaries is necessary to maintain the water supply for the land where the water is now being used and provide for future expansion of urban growth.

The company does not facilitate or inhibit growth within the service area but plans and develops the water resource to meet the demands of the public being served.

The dichotomy does not exist because the water service area limits do not constrain growth in that area and adjoining areas in Washoe County served with electric power by the Company, and have



growth potential through development of water resources by others.

Response: The intent of the above mentioned section of the DES was to illustrate that Sierra Pacific Power Company has control over the availability of water and power in the Truckee Meadows area. Being a public utility, SPPCo does have the responsibility to provide service. However, the fact of delineating or establishing service area boundaries serves to constrain or influence where growth will or will not take place. Washoe County's Population and Conservation Plan utilizes the SPPCo service area as one of the parameters in its measurements of growth effects. Thus the water service area serves as a functional planning instrument. The dichotomy in SPPCo's case is lodged in the fact that they provide power (by demand) and water service by both demand and company policy.

Comment 32-14:

SECTION III, Pages 141-142, Table III-9

#### CORRIDOR CONSTRUCTION COSTS

The draft EIS presents a corridor construction cost comparison which treats only transmission construction expenditures with regard to flat or rugged terrain. The dollar cost per customer on a yearly basis is then determined by multiplying the total construction cost by 11.5%, which represents an annual interest payment on the borrowed capital. This annual cost is then divided by 116,000; which is the number of SPPCo customers.

The analysis is greatly oversimplified and does not adequately compare actual total cost differences between routes under the complex economic circumstances that exist at the present time.

Response: (Refer to Appendix L, comment letter 32, p.10-99, for the supportive analysis provided with this comment by Sierra Pacific Power Company.)

Corridor Construction Costs: Sierra Pacific's evaluation that the proposed route (O'Neil Corridor) is the best route based primarily on considerations of total cost is correct. Sierra Pacific has invested large amounts of capital in this proposed project as mandated by the application requirements - e.g., center-line survey and environmental analysis, plus the inclusion of an archeological survey along the proposed route. In addition, the easement requirements of the proposed route are less than for the other corridors.



In the DES, corridor comparison was accomplished by selecting base costs (construction costs) predicated on line miles vs. the primary benefits to the communities involved (ad valorem) which is also a function of line miles. Discussions brought out the fact that per mile construction costs were a combination of costs, including labor, material, interest, and right-of-way acquisition, stated in terms of an average per mile cost. Based on this information, Table 3-9 of the DES presents adequate indication of the cost differences among the four corridors.

According to Sierra Pacific's figures, right-of-way expenses (acquisition of easement) are only one to three percent of the total construction costs, and are directly related to the "checkerboard" characteristic of land ownership which affects all of the routes under consideration with the exception of the proposed route. Centerline survey and archeological surveys are costs that would have to be absorbed by the applicant irregardless of the route eventually approved, and these costs are a function of the total length of the line. Sierra Pacific's costs associated with replacement (alternative) generation needed if the proposed route is not selected are misleading. The term "delay" has been used by Sierra Pacific Power Company to characterize the possibility that the proposed route would not be approved (thus necessitating alternate power generation). This characterization does not coincide with the fact that Sierra Pacific has not met their own power demand projections, or with their statement (made in joint meetings with BLM personnel) that they would field any number of construction crews to meet their required delivery date.

Sierra Pacific is correct in their statement that monetary loss is possible due to increased line distance (electrical loss) and that maintenance costs would be higher on a longer line.

Per customer costs as a method of illustrating impacts is a realistic approach, and the 11.5 percent/50 year figures utilized in the DES, p. 142, were the figures expressed by the Sierra Pacific Power Company Project Engineer. Utilizing 16.3 percent/40 year figures in amortization calculations on the original data appearing in the DES, the following comparisons emerge:



(DES Data)	Total added per customer cost	Same data calculated using SPPCO figures of 16.3% and 40 years	Figures from SPPCO letter no. 32, and SPPCO procedures
O'Neil Basin ---	\$31	\$44	\$31
Highway -----	\$36	\$52	\$51
Adobe Range ----	\$32	\$46	\$40
Metropolis -----	\$33	\$47	\$47

From these figures, the effect that percentage has on calculations of cost to customers on a per year basis is obvious. Since it must be assumed for purposes of analysis that the line would be built, then the maximum cost to the customer must be in the difference between the highest and lowest calculation, or between the longest and shortest route. The maximum difference between recalculated data (which included the 16.3 percent) and the calculations provided by Sierra Pacific is \$12 (\$20 - \$8 = \$12). Thus any decision based on cost per customer would be derived from the net difference between the least or maximum cost line, or \$12. No distinction has been made either in the DES or Sierra Pacific's comment letter as to price differential by "class of use." As Figure H-5 on p. 260 of the DES illustrates, commercial use of electrical power is greater than other consumptive uses. Thus, the residential customer would absorb less of the cost per year if the total "pass on" costs were prorated by class of use.

Any manner of analysis of this project would conclude that the proposed route involves less, both in total cost and per customer cost.

Comment 32-15:

### SECTION III, Page 141 ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION - ATTITUDES AND EXPECTATIONS

Reference is made to the defeated Reno-Sparks sewer bond issue and a suggestion that the defeat was related to a "no growth" attitude. Local community leaders feel that the first bond was defeated due to a total lack of information from the Cities of Reno and Sparks upon which the voter could have made an intelligent decision. This feeling by local officials was substantiated by the overwhelming approval by a 2 to 1 margin of all three sewer related issues in the November election, 1) the plant expansion, 2) the Reno Crosstown Interceptor, 3) the Lawton In-



terceptor. This section of the draft EIS should be revised to reflect these facts.

Response: The pertinent sections of the DES have been revised accordingly.

Comment 35-1:

2. Pages 126-127. Under the discussion of "Agriculture-Potential," impacts of the transmission line on potential new agricultural lands have not been evaluated.

Response: The intent of this section was to illustrate the fact that a transmission line can facilitate agricultural potential if that potential exists, and that the availability of land for agriculture does not necessarily mean that it will be developed. However, the intent of this question is discussed in the DES, p. 124-125.

Comment 35-2:

No consideration has been given to the effects of crossing existing farm units which are now or could be irrigated by center pivot or wheel-roll irrigation systems. Transmission towers could seriously disrupt this type of irrigation operation.

Response: It is believed that proper mitigation measures can avert serious disruption of any agricultural operation either existing or potential. If the line were to be placed in an area where sprinkler irrigation systems are utilized, then adjustments in the location of towers would mitigate the effects of this problem. Location of transmission lines along section or property lines in intensive agricultural areas can best alleviate problems with automated irrigation systems.

Comment 35-4:

3. Pages 129-131. The relationship, if any, of the new transmission line to the transmission systems of Harney Electric Cooperative and the California-Pacific Utilities Company should also be discussed.

Response: No relationship between this line and the above transmission systems has been set out in the project description, however, the Sierra Pacific Power Company's system is interconnected with the Pacific Gas and Electric system. This interconnection is outside the study area as shown on the fold-out maps.



Comment 39-4:

Page 124 - Land Uses and Ownership

This section does not actually address ownership. An appendix showing how many acres of each ownership are affected by each alternative would be helpful. For example:

<u>Landowner</u>	<u>Acres Affected</u>		
	<u>Alternative A</u>	<u>B</u>	<u>C</u>
State of Nevada	X	X	X
State of Idaho	X	X	X
Federal Government	X	X	X
Private	X	X	X

Response: Information of this type concerning the company's proposed route was available. However, because of the general nature of the alternative corridors, specific ownership data could not be determined. The Land Status Map, p. , gives a rough indication of the land ownership distribution within the study area.

Comment 47-2:

Although the Bureau's Draft Environmental Statement states that the added cost of the southerly corridors will average only about \$3 million more than the O'Neil Route, in recent discussions with Sierra Pacific we have gathered that the premium will be closer to \$12 million taking all costs into consideration. In addition, the cost of condemning the additional private property involved (about 50% more than that required for the O'Neil Route) in the southerly corridors could add as much as \$20 million.

Response: Cost differential comments are covered in the response to comment 32-14 of this section.

Comment 48-4:

There is a question on population projections for Washoe County, as most of the State planning and related service requirements are based on the Washoe County Regional Planning Council's projections. If these projections were not used, a justification should be in the EIS.

Response: The Washoe County projections utilized in the draft statement were the same projections used by the Washoe County Planning Commission's "Population and Conservation Report" concerning growth within the Truckee Meadows area.



Comment 48-8:

The Report, Fig's H-5 and H-6, are showing annual usage and cannot be readily interpreted or related back to power generation or the effect this project has on the need to meet this demand.  
(Dick Serdoz)

Response: Figures H-5 and H-6 are utilized primarily to show historical and projected electrical energy consumption by class of use. These figures are visual aids, enabling the reader to see the pattern of electrical energy demand.

Comment 51-2:

In a social-economic period of constantly increasing costs and a steady rise in inflation throughout our country, we sense within the Draft Environmental Statement a callousness toward such facts as the much greater cost of each of the alternative Corridors assessed, and the subsequent increase in cost of power to customers for 50 years -- the estimated life of the transmission line. Possibly, the implied feeling is inadvertant editorializing on the part of the personnel involved in preparing the Statement, which is purported to be totally objective and factual. In any case, such implied subjectivity toward a national policy of curtailing costs and dampening inflation lessens the credibility of the Statement itself, and seems an inopportune stance for a governmental agency to take.

Costs presented in the Statement show that the O'Neil Basin Corridor is the least expensive route for the transmission line to follow. It is also stated that this route will result in less power cost to customers. However, it is understood now that there is a tremendous difference between costs presented in the Draft Statement and cost projections termed acceptable by Sierra Pacific Power Co. These differences, according to conversations held with Sierra Pacific personnel, range up to nearly 100 percent above those costs presented in the Statement. If there are revised, more accurate cost projections existing, then any comparisons between Corridors as to total cost or power cost to customers used in the Draft Statement are felt to be misleading, incomplete, and incorrect. We strongly urge the BLM to carefully review this highly important section of the Statement and use diligence in making certain their cost projections are complete and correct prior to making any decisions or rendering any opinions on the desirability of one Corridor over another.

In this instance, we would presume to caution those responsible for producing the Statement that mere cost of constructing the line itself in no way encompasses the total cost finally allocated to the line. We would urge a more careful and practical



approach to projecting such cost segments as those dealing with: access roads, their actual length and construction dictated by terrain; restoration of disturbed areas based on actuality and experience rather than theory; acquisition of easements over private lands; and damage costs, both present and future, on private lands which can be attributed in any degree to transmission line construction and/or maintenance. We feel that factors such as these have not been fully evaluated prior to projecting costs of the line in any of the Corridors.

Response: Additional cost figures provided by Sierra Pacific Power Company have been made a part of this document and would be considered in the decision process for this project. (See Chapter 3, p. 3-35, of the final statement.)

Comment A-4:

Also, I believe the overwhelming vote to expand our sewer facility is a case of the public's desire to expand and the problems they are having, assuming we are just going to sit here, not grow and let things slide.

Another example of our policy in this area that we have generally taken the approach that to limit utilities as a means of limiting growth or population will result in a decrease in the quality of service. Also, it has a good likelihood of driving up the cost of that service. The proper way to limit growth or limit population is through zoning and through local commission action on the part of your elected officials.

Response: As a public utility, SPPCo is correct in that new demand loads are outside their responsibility to control; in fact they must provide power upon demand.

The "Attitudes and Expectations" section, Chapter 3, has been changed to reflect the passage of the second sewer bond issue vote.

Whether the company promotes growth through making power and other services readily available or that they have an obligation to the community to restrict growth will not be debated in this document, as this role would be a responsibility of local officials (city and county government), if such an issue were to be decided.

Comment D-1:

First of all, I realize the reason that it was chosen is that it is the shortest route and the cost of the route seems to have been computed on length of the building of the transmission line rather than on factors of remoteness of the corridor from exist-



ing highways, what other kinds of cost would be involved, and that's the only reason that it seems that the route, the corridor, was recommended.

Response: As stated in this document, the O'Neil Basin Corridor is the applicant's applied-for-route, and is the shortest route analyzed in the document. During the planning period prior to its application the company did consider other routes, to points other than Hunt substation (see Alternatives Section, Chapter 8). One route to Western Idaho was a shorter distance but was dropped due to environmental considerations.

Least cost is an important consideration to the applicant, however, all impacts to each alternative would and must be considered in the decision process.

## 10. Visual Resource

### Comment 5-1:

Page 166. Visual Resource and Recreation Mitigating Measures. This section should note that the effectiveness of the proposed mitigation can vary considerably depending upon the existing resource base. Constructing the transmission line in the O'Neil Basin corridor would be a major intrusion into a large expanse of relatively natural land. It is unlikely that the magnitude of the impact could be reduced significantly through selection of individual tower locations. Further, when considering the type, variety and amount of recreation use (Page 134) that occurs along this corridor, particularly in the primitive areas just south of Humboldt National Forest, we question whether the mitigation measures discussed would diminish the adverse effect the line would have on recreational activity.

Response: It is a foregone conclusion that mitigating measures can and will have different degrees of effectiveness depending upon the area being worked with.

With the application of the Contrast Rating System, we can identify the existing situation in simple terms (form, line, color, and texture) and relate this to the proposed activity. This method assists us in significantly reducing impacts relative to everything from individual tower locations to construction and road sites.

It is felt, in most cases, that the type of recreational activity occurring in the subject area generally relates to an undisturbed or "non-encroached upon by man" atmosphere. Therefore, there is a direct relationship between mitigating visual impacts and adverse effects upon recreational activities.



Comment 12-1:

There seem to be two major reasons why the highway route isn't preferred. The first is the claim that the highway route would create more visual impact. Since Highway 80 and power lines already bisect this area, the visual quality is low. One more isn't going to make much difference over most of the route, and modifications can be made in the line position and pole size and color in any area that would be specifically hurt by a visual intrusion.

Response: (Also see responses 51-3 and 47-4 in this section) The visual quality along the entire length of Highway 80 is not low. According to our Visual Resource Management System analysis, as mapped on page 91 of the DES, there are several Class II and Class III areas. The introduction of an additional power-line in these areas could indeed reduce existing visual quality.

Comment 14-3:

The access by ORV's into remote lands due to road construction is a severe threat to soils, wildlife, and primitive values. This environmental effect would be least in the highway corridor. Again, we feel it must be pointed out that since land along the Humboldt River, the highway, and railroad is generally of low interest value for off-road driving, there will be little continued demand for roads other than that required for maintenance.

Response: Mitigating measures as discussed in Chapter 4 (putting roads to bed, use of reseeding techniques, posting of signs, etc.) would reduce the access for ORV's into remote areas.

Comment 25-6:

We ask therefore that the three alternatives to the O'Neil Basin route be considered and studied carefully and that additional studies be made of archeological values, roadless areas, plant and animal species, and scenic values before any final choice is made of routes and the Final Environmental Impact Statement is issued.

Response: All four routes, the O'Neil Basin, Highway, Adobe Range, and Metropolis, were studied with the same degree of intensity in terms of the visual resource analysis process. This analysis procedure is explained in detail in Appendix I starting on page 263 of the draft ES. No need has been identified at this time for further study relative to visual resources and visual impacts.



Comment 47-4:

First, the Draft Environmental Statement mentions on several occasions the unfavorable visual impact of reflected light from the aluminum towers and insulators. Why then cannot these towers be fabricated with an anodized finish in tan, brown or other shades complimentary with the natural surroundings? Anodized finishes are durable and the added cost would no doubt be much less than that for the proposed southerly corridors.

The Draft Environmental Statement rates the Adobe and Highway/Metropolis Corridors as having either low or medium visual impacts (see page 145 of the Statement). Most persons who have stood in the meadows along the Humboldt or enjoyed the vista of Boulder Valley from Interstate 80 would take issue with this. The irrigated meadows along the Humboldt are never more than a few miles wide and the intrusion of power lines and towers would have an inescapable visual presence since no topography exists to diminish their impact.

Existing wooden power and telephone pole lines throughout the valley have a relatively minor impact due to their size and color. Even on the valley floor they are not readily noticeable from two or three miles away. For the most part existing visual intrusions are confined along the southern edge of the valley at the base of the Argenta Mountains and are obscured to a degree by the topography.

From a visual standpoint the proposed southerly corridors could not be more poorly located. With these corridors running through the center of the valley and directly over our existing meadows and planned farming areas as they do, it is obvious that no attempt has been made to camouflage their impact by utilizing the surrounding topography.

There are undoubtedly many times the number of people who would be effected in this way along the southerly corridors than the O'Neil Route. Also, when traveling along Interstate 80, many times the number of people will be exposed to a power line along the southerly corridors each day than on the O'Neil Route in a year.

Certainly the most detrimental impact of the proposed southerly corridors will be to the people who live and work along these paths. To us the rural beauty of the area where we spend most of our time will be permanently marred. Frankly, the idea of these mammoth towers within one-quarter mile of our residences is difficult to comprehend. Many of us have chosen to live in Nevada to escape this very thing.



Response: The amount of visual impact the proposed activity would have on the landscape is analyzed by comparing the degree of contrast of the proposed activity in each corridor to the existing landscape character and then to the quality of the visual resource.

This process, called the Visual Contrast Rating System (explained in detail in Appendix I page 263 of the draft statement), allows areas that have potential for the highest visual contrast (in this case the foreground zones for the proposed or alternative routes viewed from key observer positions) to be rated using the system to determine the level of visual impact created due to the introduction of a power transmission line and associated activities. The map on page 145 of the DES indicates those areas where the proposed activity would result in a high, medium, or low visual impact if no mitigating measures were taken. However, if adequate mitigating measures are taken, as suggested in Chapter 4 of the draft, the impacts generated by the proposed activity can, for the most part, be reduced to an acceptable level.

In areas designated as having a high degree of visual impact, it is likely that one of the mitigating measures would be to use a dulling process on the aluminum towers, nonreflective insulators and nonspecular conductors. In addition, individual towers would be located and sited in such a way as to reduce their presence as much as possible. (See also, comment and response 51-3.)

Comment 51-3:

In the analysis of the effects of the four possible Corridors upon all of the various peoples who might be affected, the tone of the Draft Statement appears to develop a bias more in sympathy with periodic users of each alternate Corridor than it does for those segments of the population who will be affected by the changes in each Corridor day-in and day-out over the life of the transmission line. We refer here to the highly intricate and somewhat subjective procedural tool developed for measuring impact identified as visual resource analysis. We question the degree of accuracy and authenticity of conclusions derived from this application of visual sensitivity level criteria.

While we readily admit to inability to evaluate such a process from a technical or scientific standpoint, we sincerely feel the process itself includes too high a level of arbitrary and unconsciously personal assumptions and reactions on the part of those involved in developing criteria. Because of the recent development of the process, it would logically follow that very little practical application is presently available to actually verify the accuracy of the results. Therefore, it is felt that conclusions drawn from the application of this process to the actual



and far-reaching impacts upon people should be utilized in decision-making with extreme caution, and in an experimental sense only.

We urge that a more objective and complete analysis of the impact of the four Corridors be made, covering all segments of the people who will be affected -- psychologically and economically -- by the installation and annual maintenance of the transmission line.

Response: It is important to understand that the analysis, relative to visual sensitivity levels, dealt with assessing the existing visual resource; not with measuring the amount of impact caused by any future development such as a transmission line. As referenced in Chapter 2 of the draft, and explained in detail in Appendix 1 on page 265 of the draft statement, the visual sensitivity level criteria are one of the most important aspects of determining different levels of Visual Resource Management. As pointed out on the above page, several meetings were held in BLM district offices to assist in determining this criteria. In addition, a Recreation, Cultural and Visual Resource Workshop was held and a cross section of the public invited to assist in determining the criteria to be used in the analysis. Although the sensitivity criteria selected does have a built in bias for increased numbers of users, it is not felt that the process suggests a bias for the periodic user; however, it is true that individual homesteads or ranches were not taken into account. (See Analysis, DES Appendix I, page 263.) It should be pointed out that this is only one factor used to determine Visual Resource Management classes. Another very important criteria, having nothing to do with numbers of viewers, is scenic quality. This process, as explained on page 264 of the draft, analyzes 6 key factors: landform, color, water, vegetation, uniqueness, and intrusions.

When the evaluation is complete on a given land unit, the individual key element scores are totalled and a letter rating of A, B, or C is assigned. Areas rated as "A" have high scenic quality; areas rated "B" have moderate scenic quality; and areas rated "C" have low scenic quality.

All areas rated "A" automatically fall into the second most restrictive Visual Resource Management class (VRM Class II). Therefore, in addition to the visual sensitivity level determination, one can easily see that regardless of how many people view an area, or how often they view it, the potential for restrictive management in terms of visual resources is also there due to the scenic quality evaluation. Because of the number of individuals involved with developing the sensitivity level criteria, the numbers of people involved with scenic quality evaluation, and the basic process itself, we cannot agree with the comment that



the process has too high a level of arbitrary and unconsciously personal assumptions.

## 11. Historical/Archeological Values

### Comment 10-1:

I have reviewed the document and find that it recommends measures to mitigate adverse impacts to certain sites along the O'Neil Basin Corridor but fails to mention others which are subject to unavoidable adverse impact, including:

(1) In addition to the specific recommendations (ES: 168) about the strategic placement of constructions ("poles"), we recommend the avoidance of certain alternate access roads for the O'Neil Basin Corridor (Part III: 2-3).

(2) A systematic collection was made of archaeological specimens from the smaller surface sites as reported in the Draft Statement (p. 98) and we indicated in our report that no further field work was judged to be required to mitigate predicted adverse impacts. We did point out, however, the need for a scientific report of our findings in order to complete mitigation and this is not stipulated in the Draft Environmental Statement (see Part III: 5-6).

Response: This comment points out a definite oversight in the BLM's mitigating measures as they were given in the draft ES. In recognition of this, the mitigating measures for the Final Environmental Statement have been substantially revised to address this valid concern.

In response to question (2) in regards to requiring a "scientific report" as completion of mitigation for sites previously collected, it must be the BLM's position that this requirement has been essentially met, and that requiring further reports would impose an unreasonable condition on the applicant (Sierra Pacific Power Company). This is not to mean that the BLM is of the opinion that the subject cultural resources were fully mitigated with the simple act of collection; on the contrary the BLM recognizes that mitigation is not completed until salvaged data is cataloged and deposited with a public institution, and a scientifically acceptable report is received by the BLM as documentation of final completion of mitigating measures. The fact is, these conditions have been met by the Sierra Pacific Power Company, as collections were cataloged with the Nevada State Museum in Carson City and a report filed with the Nevada BLM, Winnemucca District Office (CR Report 2-83). Albeit, this report was incorrectly thought to be only a preliminary document by the archeologist and does not meet desirable standards of analysis, nevertheless it



does provide a minimal level of useful information and we are compelled to accept it as fulfillment of Sierra Pacific's obligations toward the protection of previously collected cultural resources.

Mrs. Rusco is aware that this somewhat compromising situation came about because of a whole array of misunderstandings and misconceptions by the Sierra Pacific Power Company, the contracted archeologist, and Federal representatives, in regards to collection of cultural materials for ES evaluative purposes. We believe that this situation is now corrected and will not occur again. But, to hold the Sierra Pacific Power Company responsible for errors made by all the parties does not appear to be quite "fair," and may border on being illegal. We might suggest that Mrs. Rusco take up the question of funding for a "final" scientific report with the National Park Service, the Nevada SHPO Office and the Nevada Archaeological Survey, or possibly the Sierra Pacific Power Company outside of ES stipulations.

Comment 10-2:

(3) Including the sites in Sacramento Canyon which are described in the Environmental Statement as subject to unavoidable adverse impact which requires mitigation (p. 167-168), there are a total of 24 archaeological sites along the O'Neil Basin Corridor which we judge to be eligible to the National Register and which are subject to unavoidable adverse impact if the line is constructed along that route.

These sites are reported in Part II (p. 17-21, and Appendix A) and we recommend additional field work which in our opinion would provide adequate mitigation of impacts (Part III, p. 6-7). Results of this field work should be presented in a scientific report.

Response: It is certainly the BLM's intent to ensure that significant cultural resource data is preserved from any properties that may be substantially altered or destroyed by construction activities. This is usually expressed by stipulating salvage requirements where this is considered the most reasonable and prudent course of action. When salvage is required there is always a corollary requirement for submitting a final, scientifically acceptable report as documentation that such work has been satisfactorily completed. This policy would, of course, apply for the entire O'Neil Basin Corridor, not just Sacramento Canyon. Again, cultural resources mitigating measures, as given on p. 168 of the draft ES did not clearly specify this requirement. Accordingly, mitigating measures in the FES have been revised to reflect this concern.



Comment 12-3:

Two more points seem worthwhile to mention. Firstly, it seems that in a project of this magnitude, an alternate route to the O'Neil should have been thoroughly investigated as part of pre-building procedures. This apparently was not done, at least in the area of archaeological values. It makes me wonder about how carefully other values were examined on the alternate corridors.

Response: A cultural resources survey would be required for any current and/or new routes across unsurveyed portions (regardless of land ownership) before any type of construction is approved, as specified in Chapter 4 of the final statement.

Comment 16-1:

(This comment is contained in its entirety in letter No. 016, Appendix L, p.10-91, of the final statement.)

Response: The BLM would insure compliance with the National Historic Preservation Act of 1966, E.O. 11593, and 36 CFR 800 procedures as they are applicable to the proposed action. (Also, see responses 37-1 thru 3.)

Comment 25-2:

We also question the seeming selection of the O'Neil Basin route before the draft EIS was even completed. For example, only the O'Neil Basin route was actually surveyed by an archeological team; the other routes were merely sampled.

Response: It is correct that the O'Neil Basin Corridor was the only proposed route intensively field surveyed for archaeological and historical properties (cultural resources). This procedure was actually far more rigorous than was needed for ES evaluation purposes and came about through certain misunderstandings between the contracted archaeologist, Sierra Pacific, and BLM representatives, as to the number of corridors to be considered. Realizing that data was needed for the other proposed corridors, but that from a practical standpoint it was not possible or necessary to assess all other corridors in the same manner as the O'Neil Corridor, The Nevada State Museum was asked to provide an evaluation of other proposals based on less intensive data gathering methods, in order to give the BLM an equitable, but realistic, means for weighing the various proposals. This was done. By no means should it be concluded that the nature of this assessment implies pre-ES selection of the O'Neil Corridor or any other corridor under consideration.



Comment 30-1:

As stated in the EIS (p. 98), the proposed routes for the transmission line in Idaho have not been adequately inspected for the presence of archaeological and historical properties. In 1975 Prof. B. Robert Butler of the Idaho State University Museum did conduct a survey of various portions of the route that cross BLM lands in southern Idaho. A new route has been proposed since Butler's work, but this new route has not been surveyed.

Response: See comments 12-3 and 25-2 in this section.

Comment 30-2:

Also, an inspection of the transmission line route where it crosses private land in Idaho has not been conducted. The assessment of the archaeological and historical properties on private land is clearly required (36 CFR 800.3c2) in a project of this nature before the project can proceed.

Response: See comments 12-3 and 25-2 in this section.

Comment 30-3:

We do agree with the recommendations of the Nevada archaeological survey for the mitigation of impacts to archaeological properties along the route (pp. 166-168).

Response: The BLM is solely responsible for the mitigating measures. Nevada Archaeological Survey recommendations along with many others were considered in formulating the mitigating measures, however, the mitigating measures as given should not be construed as being those of the NAS, or any other agency other than the BLM.

Comment 37-1:

The 151 cultural resources located during the reconnaissance survey (page 98) should be described and evaluated for their National Register of Historic Place potential.

Response: This, in fact, has been done for most of the sites and would continue to be done under 36 CFR 800 procedures, if there is reason to believe that the project may affect any potential National Register-eligible properties.

Comment 37-2:

In lieu of comments from the Nevada State Historic Preservation Office, we concur with the commitment made on page 194 to solicit comments on proposals from the Advisory Council on Historic Preservation (ACHP).



Page 98 states that for the O'Neil Basin Corridor in Parts I and II of the survey area "a systematic collection of archeological specimens (sic) from the surface of small fragile pattern sites have been completed by the Nevada Archeological Surveys". Until the cultural resources have been described and evaluated for their potential National Register significance and the Advisory Council on Historic Preservation given an opportunity to comment, any mitigation measures, including surface collection, is inappropriate.

Response: We agree that these collections were possibly inappropriate. But, they were made in a vacuum of explicit guidance at the time this survey was conducted in 1974. This situation has since been corrected and should not occur again. (Also refer to responses 10-1 and 25-2.)

Comment 37-3:

The determination of a "no adverse effect" as discussed on page 178 should conform to ACHP guidelines. The final environmental impact statement should discuss in greater detail the proposed data recovery program. This information should include the name and qualifications of the Supervisory Archeologist, research objectives, and should specify the methods and techniques to be used for recovery of data contained in the property. This plan should meet with the approval of the Advisory Council on Historic Preservation.

Response: The Final ES will not discuss in greater detail a "proposed data recovery program." It would be premature and inappropriate to do so before a decision is made on the actual placement of the transmission line or even if it shall be constructed. Until such time, we cannot know what the actual problems in regard to effects on cultural properties would finally be, or even if a data recovery program would actually be needed. To go into the kind of detail asked for would also infringe upon the right of the applicant, Sierra Pacific Power Co., to negotiate with qualified Cultural Resources professionals and additionally infringe on the ability of a potential Cultural Resources contractor to submit a realistic research design. "Effect" determinations as well as any data recovery plans would be made in compliance with ACHP guidelines as set forth in 36 CFR 800 procedures, as those regulations are applicable.

Comment 47-6:

#### Historical Impact

The proposed Highway/Metropolis Corridors would be located along the most significant historical section of the state. Prior to the advent of the white man the Humboldt River provided a reliable source of food and water for early inhabitants and, as the



Draft Environmental Statement points out, many semi-permanent encampments have been found along it. More recently the area has been the site of the California Trail, the first transcontinental railway, and the first transcontinental highway. Many of the famous personalities who shaped the history of the West traveled this very route. Must we now desecrate such a historic area in order to preserve another route relatively void of historical significance?

Response: The BLM's analysis agrees that the selection of the Highway Corridor would have potentially the highest impact upon cultural resources (archeological and historical properties). This evaluation would be considered in the decision process, but on its own cannot rule out selection. The Metropolis Corridor should not have as great an impact, but again this factor alone does not dictate selection. Any selected corridor would be subject to strict mitigating measures to protect cultural resources.

Comment D-2:

I myself would prefer the highway route with one possible apprehension, and that is the letter quoted in the EIS from Mary Rusco, with the Nevada State Archeological Association, and in this letter she indicates that the highway route might have some adverse archeological effects which would not be found in the other three routes.

She indicates that the other three routes are comparable, although I understand that the survey made sampled in fact, it was not a sampling, it was a complete walking of the O'Neil Basin route. None of the other routes were even sampled as far as archeological and historical values were concerned, and I feel that this was an omission that sort of indicated to me that the O'Neil Basin route was selected and then the study was made.

I really feel that other routes should also be sampled as far as archeological and historical values are concerned.

I gather from the letter quoted in the EIS that Mrs. Rusco was concerned that the highway route more or less follow the Humboldt River, and, of course, the Indians did tend to have their camps along the river, and I'm not sure how far the highway route would extend toward the river. I couldn't tell from the map that was provided in the EIS, or even the map up here, so I think that might be something to be considered.

Response: Refer to responses 25-2, 30-1, and 47-6 in this section.



## 12. Recreation Resources

Comment 47-7:

Not only will the proposed southerly corridors degrade the recreational enjoyment of areas in close proximity to Battle Mountain and other towns along the route, but they will be particularly detrimental to the enjoyment of the proposed Rock Creek Dam. Access to this site will run along the south easterly base of the Sheep Creek Range from Battle Mountain in close proximity to the proposed southerly corridors for several miles. Again the number of people engaged in recreational activities who would be exposed to power lines along the southerly corridors will be many times greater than those exposed along the O'Neil Route.

Response: Visitors to the proposed Rock Creek Dam would have to pass under the line on their way to the proposed dam site at least four or more miles to the north.

The southerly corridors would be visible to larger numbers of people, as these corridors more closely follow the transportation routes across northern Nevada.

## 13. Ecological Interrelationships

Comment 12-4:

The second point concerns the section on ecological interrelationships, in which you talked about the problem of increased salt concentrations in the river below newly irrigated croplands (p. 155-57). This worries me, because the Lovelock area is already important agriculturally. Don't these farmers use this water? If it's already salty by the time it reaches Lovelock, this will be self-defeating economically. The salt will also affect vegetation in the Humboldt Sink marshes, and many animals depend on this vegetation as their food source. For example, sego pondweed is very important to the canvasback and redhead ducks in choosing a nesting area. This problem should be given more consideration in the future.

Response: Additional salts may drain into the Humboldt River and eventually into the Humboldt Sink marshes, but this impact would be contingent upon the development of as much as 30,000 acres of new cropland between Lovelock and Battle Mountain. The increase in available power which would be provided by the proposed transmission line could pave the way for development of additional cropland, but would certainly not be the only incentive for new development.



The analysis, in using the 30,000 acre figure, is demonstrating a "most severe impact" situation-that all 30,000 acres would be brought into production within the same year. Economic constraints (in that the potential croplands are widely scattered) would most likely preclude same-year development of these acreages. Additional salt production from these new acreages would decrease with time. Upstream usage of sprinkler irrigation on new croplands would reduce the amounts of additional salts reaching the Humboldt River.

Comment 48-5:

The key ecological interrelationships, Fig. II-6 should be re-evaluated because air quality is affected by temperature, precipitation, alkalinity, texture, percent cover, and mining. Temperature -- when you consider inversions. Precipitation -- when you consider cleaning the air. Alkalinity -- when you consider regrowth. Texture -- when you consider potential to recover. Percent cover -- when you consider potential to cause natural fugitive dust. Mining -- this has a major impact on localized areas and it is growing in the study area.

Response: Figure 2-6 has been revised accordingly.

#### 14. Agriculture

Comment 47-1:

The proposed Adobe and Highway/Metropolis Corridors pass directly through our existing irrigated meadows and our new farm acreage under development. In addition these corridors are located adjacent to existing and planned headquarters areas, employee residences and our airstrip. We also plan the construction of additional facilities along this route. A map showing these critical areas of the ranch in relation to the proposed corridors is shown in Exhibit I.

Since our cattle are supported during the five winter months on the roughly 30,000 acres along the Humboldt (of which 5,000 are flood irrigated and farmed) a loss of forage production in this area would have a significant impact on carrying capacity, and hence on profitability.

In addition, power lines across the new farm acreage under development will require abandonment of each quarter section traversed, since pivot irrigation systems require a full quarter section in which to operate. Each quarter section so abandoned will mean a loss of revenues of over \$70,000 annually to the local area.



The most immediate impact on our operation will be the loss of productivity along our meadows adjacent to the Humboldt River. We know from experience that once soils in this area are disturbed soil productivity decreases dramatically for an extended period. In the mid 1950's, 400 acres were leveled in this area in an attempt to develop increased hay production. Today, over 20 years later, production on this ground is only about 50% of that on adjacent ground. For this reason, all future farming developments on our ranch will involve sprinkler rather than flood irrigation systems which leave the soil profile relatively undisturbed because leveling is unnecessary. One need only compare the productivity of the flood irrigated farming developments in Antelope Valley, south of Battle Mountain, to the sprinkler irrigated farms in Paradise Valley, near Winnemucca, to be convinced of this point.

Response: Transmission line construction takes little land out of production on either intensive farming areas or pasture grazing areas. In the Boulder Valley, construction roads would not be necessary as overland travel would be used. Disturbance to vegetation and soils would be less than 2 acres per mile, mainly at tower site locations.

It is recognized, given the potential for agricultural development in Boulder Valley as a whole, that only one type of operation has the potential for disruption and that is pivot irrigation systems. Due to the general nature of the alternative corridors, and with the knowledge of the location of potential agricultural areas most such areas could be avoided. Properly located transmission line towers would have minimal conflict with existing sprinkler irrigation systems. The impact to livestock forage, as indicated on page 185 of the draft statement is expected to be minimal.

Existing and planned headquarters areas, employee residences, airstrips, etc. would be taken into consideration in final line location if an alternate were selected so as to avoid these improved areas. The general nature of the corridor would allow for such avoidance.

Comment 47-9:

The argument for these southerly corridors is apparently that the rural, rugged areas of Nevada are a valuable resource and should be protected. We would be among the first to agree that no natural resource should be wasted. But land to farm and live on is an even scarcer resource. Over 60 million acres in Nevada are devoted to public and multiple use purposes. In fact, there is more public land in the state of Nevada alone than farm land in the 11 western states. Much of this land offers scenic and recreational resources comparable to that along the O'Neil Route. The environmental loss of a few thousand of these acres is of relatively small consequence. But the loss to our productive lands is significant.



Response: All impacts on each corridor, including those to productive farm lands, would and must be weighed and considered in the decision process.

## 15. Alternatives

Comment 12-3:

Two more points seem worthwhile to mention. Firstly, it seems that in a project of this magnitude, an alternate route to the O'Neil should have been thoroughly investigated as part of pre-building procedures. This apparently was not done, at least in the area of archaeological values. It makes me wonder about how carefully other values were examined on the alternate corridors.

Response: The four corridors were treated with the same level of intensity based on available information. More archeological information was available for the O'Neil Basin Corridor than for the others because the applicant contracted for the study as input to their own environmental assessment of the applied-for route.

Comment 32-20:

### SECTION VIII ALTERNATIVES TO THE PROPOSED ACTION

Page 190, paragraph 4: This paragraph attempts to establish the use of helicopters for power line construction as a feasible alternative with the by-product of reducing or eliminating access roads.

It should be understood that use of a helicopter for power line construction is dependent upon the type of tower design and terrain encountered. Many contractors have made economic comparisons which indicate that the use of a helicopter in some mild terrain conditions is not as feasible as contemporary construction methods.

The use of the helicopter in rough terrain will eliminate the need for an access to support the use of a crane during erection. However, footing installation, stringing operations, and final clipping requires an access road to the tower site where terrain eliminates overland travel.

Response: Section revised accordingly. Helicopter construction methods are a feasible alternative, however, the process does not necessarily reduce access needs in rough terrain areas.



## 16. Other Agency Projects

### Comment 13-11:

The authorized Corps project, Humboldt River and Tributaries, Nevada, consisting of Hylton, Vista and Devils Gate Dams and Lakes, would be located in the vicinity of the Sierra Pacific Power Company's proposed project. We are presently conducting advance engineering and design studies for these dams and lakes to provide flood control, irrigation and recreation. The Vista and Devils Gate Lakes sites appear to be within the path of the Adobe Range and Metropolis Corridors; therefore, before the final route alignment is selected for the transmission line, consideration should be given to the possible future construction of these dams and lakes. In March 1976 we furnished your office a copy of our "Humboldt River and Tributaries, Nevada, Environmental Inventory and Base Assessment", dated September 1975, showing the locations of the dams. A copy of a map showing the Humboldt River Basin and the proposed lakes is enclosed.

Response: Text revised, p. 3-4 .

### Comment 50-1:

The Lander County Fair and Recreation Board is presently conducting a feasibility study for a recreational-irrigation reservoir on Rock Creek. The Adobe route would significantly impact the use of the irrigatable land within the Boulder Valley area that this potential reservoir would serve. Also, the Adobe Route would place the transmission line along the base of the Sheep Creek Range which is the potential recreational camp sites to be utilized in conjunction with the reservoir. Needless to say, this type of transmission line does not give the visual impact that would be desired with such a recreational facility.

Response: Careful examination of 7.5-minute topographic maps indicate that the southern-most (and preferred) dam site No. 2 (T. 34 N., R. 48 E., Sec. 8) and the associated recreation site in NE  $\frac{1}{4}$  Sec. 18 are both 4 miles upstream from the northern edge of the Adobe Range Corridor. Some recreationists may have to cross under the transmission line to get to the sites, but the line would not be in the near-view area of anyone at the recreation or dam sites.

### Comment 52-1:

The Fair and Recreation Board for Lander County has reviewed the proposed Sierra Pacific Power Company's 230/345 kilovolt transmission line from Oreana, Nevada to Hunt, Idaho. This project and the potential impact of several of the corridors under consideration will have an adverse impact on the project presently under consideration by the Lander County Fair and Recreation Board. Our project consists of a potential reservoir for recreational purposes on Rock Creek. The proposed dam site is on the lower portions of Rock Creek at its intersection with the Boulder Valley Flat. The reservoir itself will extend up the Rock Creek



Canyon approximately four miles. The Fair and Recreation Board has under consideration a recreational development jointly owned by Lander County and Eureka County. The proposed adobe range corridor will pass within a half mile of our proposed recreation site. This will adversely impact the potential use of the recreational site and the Fair and Recreation Board would like to be on record as objecting to the adobe range corridor.

Response: Refer to response 50-1 on preceding page.

#### 17. Communications

Comment 22-1:

Included within Section III: Environmental Impacts of the Proposed Action, in the section on page 128 entitled "Transportation", the bald statement is made that "railroad communications may be disrupted". No explanation is given as to how serious the impact of this disruption might be, or steps which are planned to alleviate it. I feel that fuller consideration should be given to this question.

Response: If the transmission line were constructed too close and parallel to the railroad tracks, resulting impacts would include a shock hazard, false control signals, and communications interference. The degree of incompatibility depends on: 1) the design characteristics of each system, 2) the length of parallel, 3) climatic conditions, 4) the resistance of the soil to the flow of electricity, and 5) the separation between systems ("The Need For a National System of Transportation and Utility Corridors," 1975). To prevent any impacts on railroad operations, the transmission line would be constructed with adequate separation from the railroad. This required separation would be determined jointly by Sierra Pacific Power Company's electrical engineers and railroad company officials.

Comment 35-5:

4. General Comments. The environmental statement would be enhanced by discussions on the following items:

- a. Noise levels.
- b. Fire prevention and control.
- c. Nonreflective conductors and towers.
- d. Possible radio and TV interference.

Response: Text revised. Refer to FES Chapter 3, p.3-44. For a discussion on the use of nonreflective towers (use of nonreflec-



tive conductors is standard operating procedure), see Visual Resources section of Chapter 4, p. 4-5 .

Comment 47-5:

We are concerned, as well, about the impact of these power lines on commercial radio and television reception and on two-radio communications. We expect that such radio communications will become increasingly important to our operation.

Response: Some radio interference would occur with persons listening within 250 feet of the transmission line right-of-way. There would be no interference to FM reception. Anyone located 800 feet or more from the line would have no impacts from radio interference, television interference, or audible noise, even under the most adverse weather conditions. Audible noise from the line (primarily a crackling or hissing sound) would not occur during fair weather, but does occur (within 800 feet) during rain, fog, and snow. Heavy rain would tend to mask the sound.

## 18. Mitigating Measures

Comment 32-16:

Page 161, paragraph 3:5 states that a set of specific stipulations will be attached to the BLM grants of right-of-way. When will these specific stipulations be presented? If they are not to be presented until a specified pre-construction meeting, then we will be delayed beyond the right-of-way grant date to start any construction before compliance to the special stipulations are met. The specific and final specific stipulations should be presented to the grantee during the final EIS preparation. This will allow the grantee ample time to comply before a final right-of-way grant is issued. The contractor will also be aware of these specific stipulations while reviewing construction bid packages.

Response: Stipulations attached to the right-of-way grant would be prepared and reviewed with the applicant after a final decision has been made and prior to the issuance of the grant.

Comment 32-17:

Page 162, paragraph 3: States that the mitigating measures will include all lands ownership.

As has been discussed with management personnel of both Sierra Pacific and the BLM, Sierra will apply all reasonable mitigating



measures on private land as well as public, but private land right-of-way agreements are agreed upon between the private owner and Sierra and are not under the BLM jurisdiction.

Response: The current position of the BLM is that mitigating measures as included in Chapter 4 would apply to all lands ownership. These measures would be included as stipulations to the granting document and would be reviewed jointly by the applicant and BLM prior to issuance of the grant. An attempt would be made at this time to resolve any conflicts concerning mitigation on private land.

Comment 45-1:

The DEIS identifies many effective measures to minimize potential impacts on water quality. We urge the Bureau to see that the measures discussed are, in fact, implemented and additionally recommend that the Bureau review and consider applicable erosion control measures contained in Process, Procedures and Methods to Control Pollution Resulting from All Construction Activity, EPA 430 19-73-007 (copy attached). Construction impacts and potential mitigation measures should be reassessed throughout the planning, design and construction phases of the project to ensure that the water quality impacts are minimized to the fullest possible extent.

Response: The EPA publication mentioned has been considered in preparation of the final statement.

Comment 48-2:

What is the applicant's plans for the removed brush, debris or other material if it is not to be burnt?

Response: Chapter 1 (Construction Sequence and Techniques), states that all material of this type would be removed and disposed of in an approved manner by the applicant.

Comment 48-3:

The EIS states the Sierra Pacific Power generator is 566 MW. This generation should be separated as to hydro-electric or fossil fuel fired with location for possible future inter-ties with this project. The other utility corridors proposed should be included so the selected corridor could be evaluated with a possible piggy-back on adjacent land thereby utilizing a utility corridor approach and not opening up more virgin land. The utility corridor approach appears to be implemented with the Metropolis and Highway corridors.



Response: This generating capacity is made up of 11.7 Mw from hydro-electric stations, while the majority of the generating capacity, 554.5 Mw, is produced by various fossil fuel-fired generators. (SE&A Environmental Analysis, p. I-3, April 1975.) Generally, the company's generation is intertied into one system. This proposed project would interconnect with the system at Valmy, Oreana, and Tracy.

Other utilities rights-of-way considered in a corridor approach included presently installed facilities such as: highways, railroads, telephone lines and buried cables, gas lines, and other electrical transmission lines.

Comment 48-9:

What enforcement controls are available to assure that revegetation will be accomplished? Who determines "where soil and climate are favorable" for revegetation efforts? What are the types of plants to be used for revegetation? All storm runoff control devices (culverts, dams, etc.) should be maintained as an integral part of line maintenance.

Response: These are site-specific measures which would be determined in the field by a Bureau-assigned Compliance Officer during construction and during the clean-up and restoration process. (Refer to Appendix E, Revegetation, which contains guidance for the Compliance Officer on revegetation.)

## 19. Editorial

There were a total of nine comments of an editorial nature. All nine are reflected in changes to the text or graphics, or both, as necessary.

## 20. General Comments

Comment 6-1:

However, the reviewer cannot comment on BLM's proposed major Federal action if one does not know which corridor BLM prefers. In effect, BLM's proposed action is not sufficiently defined so that the reviewer can distinguish between BLM's proposed action and BLM's alternatives (including alternate corridors). This is required in order to comply with Section 102(C) of the National Environmental Policy Act (NEPA) of 1969.



Response: The proposed action is a non-BLM energy initiative from Oreana, Nevada to Hunt, Idaho on the O'Neil Basin Corridor as described in Chapter 1.

The National Environmental Policy Act requires an analysis of the proposed action and viable alternatives, not which action is preferred by the preparing agency.

Comment 6-6:

Page 141, top paragraph: No solution is provided as to the conflict between the Burley District's recommended route and the applicant's proposed route. How does BLM plan to resolve this conflict?

Response: The Environmental Statement is a document to describe the environment, analyze impacts, and point out mitigating measures. It is not a decision document.

Comment 13-2:

In addition, you should be aware that a Department of the Army permit may be required under Section 404 of the Federal Water Pollution Act Amendments of 1972 (Public Law 92-500) for activities involving disposal of dredged or fill materials in waterways.

Response: The requirement for a permit under Section 404 of the Federal Water Pollution Act for activities involving disposal of dredged or fill materials in waterways was listed in the draft statement under Federal Agencies Jurisdictional Responsibilities in Chapter 1, page 3 and again listed as a required mitigating measure in Chapter 4, page 169 of the draft statement.

Comment 20-1:

It has come to our attention that your office has recently drafted an environmental statement for several alternate routes for a proposed 230/345 KV transmission line from Oreana, Nevada, to Hunt, Idaho. Two of the proposed routes, the "Metropolis" and the "Highway", pass sufficiently close to the Elko Airport to be considered to have a potential affect on the navigable airspace in the vicinity of the airport, as designated in Part 77 of the Federal Aviation Regulations. The section of Part 77 which is applicable to the proposed transmission lines has been attached for your review, in case you have not already considered the potential for conflict with air navigation in the area.

We also wish to advise you that our draft Environmental Impact Assessment Report for the proposed airport expansion will note



the two proposed routes as potential hazards to air navigation in the area, subject to final determination by the Federal Aviation Administration.

Response: FAA criteria including tower height-distance relationship in the vicinity of airports is pointed out in Chapter 1, page 3 and is listed as a required mitigating measure in Chapter 4, page 169 of the DES.

The corridors as indicated on the maps in the statement are considered as general areas along which a right-of-way could be considered. If the Adobe or Highway corridors are considered, the tower height-distance relationship as set out in FAA regulation AC 70/7460-2F would be considered in the determination of the right-of-way location.

Comment 32-1:

The draft EIS should describe in more detail the extensive environmental and economic route selection studies made by both Sierra Pacific Power and Idaho Power, and their consulting representatives prior to the January 31, 1975 application date.

Response: The DES did not describe the environmental analysis submitted by the companies, however, data from these reports were quoted extensively.

A description of the reports submitted has been made a part of Chapter 1.

Comment 32-10:

The bar graph Figure III-1 is somewhat misleading, due to the fact that the location of supply points is dictated primarily by the site being secure (vandal free) and a sufficiently large supply inventory to service the assembly yards. There would be approximately five (5) supply points for a typical transmission line project within the 250 to 350 mile range. It is uneconomic to establish considerably more points than five or six, due to the requirement to fence and provide security patrol for each site. Inventory control also becomes a major problem, making sure that each site has exactly the right structure components for an efficient structure assembly process.

Response: An explanation has been added to Figure 3-1 to clarify the data shown. The additional data discussed here has been incorporated into Chapter 1.



Comment 32-12:

SECTION III, Page 131 INTERRELATIONSHIPS WITH OTHER TRANSMISSION SYSTEMS

Page 131, paragraph 1: While reviewing this topic about Interrelationships with other transmission systems, the DES states, "Initial construction and operation of Intertie #2 will be at a 230KV configuration; however, detailed studies are presently underway by Sierra Pacific's planning department to determine the various effects and economics of a future conversion of the line to a 345KV designation, and when this upgrading should occur.

When this conversion does take place, the nominal power transfer capability of this intertie will increase to 282 MW.

The decision to design the line for 345KV capability was made after the Draft EIS writing was well under way. Increased tower spacing between phases, adequate numbers of insulators, and bundled conductor are three major items to be a part of the initial construction. To provide for these three items initially instead of a later date has increased the expenditures \$8500/mile or \$2,400,000.

Page 164, paragraph 1: States that the transmission line will be upgraded to 345KV at some future date, requiring access to the right-of-way a second time for construction purposes.

We again emphasize that no future access to the right-of-way is required for a future 345KV upgrade.

Response: The document will be changed to read that initial construction of the project would be at a 345 kv capability and would be initially energized at 230 kv. There would be no need to "upgrade" the transmission line, causing further impacts at a later date.

Comment 32-18:

Page 168, paragraph 7, states that a crossbraced "H" frame tower will be used in agricultural areas. What if a more reasonable self-supporting structure is available? An applicant should not be limited to X-brace, H-frame if a single pole structure may be more economical.

Response: The term crossbraced "H" frame tower has been changed in the document to a broader, less, restrictive term. The term "self-supporting structure" will be used.



Comment 35-3:

Portions of the transmission line will cross the Salmon Falls Project. We suggest during the final planning and construction phases of the transmission line that thorough consideration of existing and proposed irrigation facilities be considered, and close liaison between the construction agency and the Bureau of Reclamation be maintained. Transmission line routing through lands with irrigation potential should parallel property boundaries, where practicable.

Response: Close coordination between the applicant and the Bureau of Reclamation would be required, as set forth in Chapter 4.

Comment 39-2:

2. Page 170: Should include reference to the requirement by Idaho Department of Water Resources that a stream channel alteration permit be obtained for any alteration of a continuously flowing stream below the mean high water mark.

Response: The text has been changed to indicate that a permit from the Idaho Department of Water Resources is required for any stream channel alteration.

Comment 49-1:

The completion of this project will interconnect Sierra's system with that of Idaho Power and will have the capability to transfer 150 megawatts of power between the service areas of the involved utilities. This capability will increase to 250 megawatts when the proposed line is converted to 345 kV operation.

Response: These transfer capabilities differ from those provided by Sierra Pacific Power Company as indicated on pages 130 and 131 of the draft statement. The company was requested to recheck the transfer capabilities and they determined that the data previously provided was correct.

Comment 51-1:

#### INADEQUACY OF BLM POLICY OF INFORMING AFFECTED PARTIES

There is a general inference in the Draft Environmental Statement prepared by the BLM that even though the general public and individual parties affected by this project were knowledgeable about the project, they showed very little reaction or interest in the matter. The Statement concludes this after pointing out that there have been few individual responses and only minimal participation at the hearings concerning the matter.



We contend that there would have been a much greater degree of input by the general public involved and the individuals affected if there had been a more conscientious effort made to directly contact and fully inform these parties as to the wide area of the state affected and the substantial degree of impact imposed by the various routes suggested for the transmission line. Even though agency procedure may have been followed in informing both the general public and the individuals affected by the project, it is our feeling that the procedures of notification and fully informing as to alternative routes and their impact have been minimal and extremely subjective. An undated, form letter stating a Draft Environmental Statement is available for study and merely alluding to the possibility of more than one route hardly seems adequate in a matter having the major impact that this project does. Further, the release of this form letter hardly allowed sufficient time for any interested party to adequately study the matter and prepare an in-depth response. We feel that the governmental agency involved has clearly sidestepped its basic responsibility in serving the people by not fully informing them in this instance. We hope that in the future, this procedural policy will be improved.

Response: Sierra Pacific Power Company did hold a number of informational meetings during the early phases of their planning in various towns along the routes. Major landholders along the various corridors were informed during mid-October by letter and news releases of the availability of the draft statement and of the public hearing held in Reno, Nevada on November 16. The company's informational meetings were indeed poorly attended, if at all. Only two landowners commented on the draft and none attended the public hearing.

Individual contact was made with one landowner which apparently generated both comment letters from landowners. This confirms the contention that individual contact with the landowners possibly affected would have lead to more involvement.

Comment A-1:

An example of that would be statements that the future 345 conversion will require use of the right-of-way. We will be building a line initially for 345 and the conversion would be okayed without even taking a look at the line route.

Response: Refer to response 32-12 of this section.



21. Federal Land Policy and Management Act of 1976,  
Sections 201, 503, and 603

Comment 17-1:

The O'Neil Basin route in particular is totally unacceptable as the route goes near potential additions to the Jarbidge, Nevada's only wilderness area. I understand that BLM must begin to study large tracts of roadless areas as to their wilderness potential. Approving this particular route without studying it first may be a violation of Section 603c of the BLM Organic Act.

Comment 19-2:

(P. 78) We are deeply concerned about the lands which have obvious primitive values along the O'Neil Basin Route. This mountain and stream land still retains its primitive character. The BLM is now required to study primitive lands for possible Wilderness classification. The construction of the transmission line through the O'Neil Basin will commit to industrial use lands which could well be protected as wilderness. The reasons in support of the route due to cost and construction time are irrelevant when compared to the loss of potential primitive areas which continue to shrink in an increasingly urbanized world.

This reason alone seems sufficient for denial of the request. These areas must be studied for suitability prior to this irretrievable commitment of primitive land.

Comment 21-2:

I must also point out that the proposed O'Neil route is probably illegal under the new Federal Land Policy and Management Act of 1976, signed by the President on October 21, 1976. Two provisions of this law lead me to this conclusion: Sec. 503, relating to right-of-way corridors, and Sec. 603, relating to wilderness studies.

Section 603 of the Federal Land Management and Policy Act sets up a program of wilderness reviews for roadless areas on the public domain lands managed by the Bureau of Land Management. Subsection (a) provides in part that:

"Within fifteen years after the date of approval of this Act, the Secretary shall review those roadless areas of five thousand acres or more and roadless islands of the public lands, identified during the inventory required by section 201(a) of this Act as having wilderness characteristics described in the Wilderness Act of September 3, 1964, and shall from



time to time report ... as to the suitability or nonsuitability of each such area or island for preservation as wilderness."

Further, subsection (c) provides in part that:

"During the period of review of such areas and until Congress has determined otherwise, the Secretary shall continue to manage such lands according to his authority under this Act and other applicable law in a manner so as not to impair the suitability of such areas for preservation as wilderness ...."

The intent of this section is thus clear. The Secretary of the Interior (through the Bureau of Land Management) is to inventory all roadless areas on the public lands and must maintain the suitability of these areas for preservation as wilderness indefinitely or until Congress specifically directs otherwise.

Comment 21-3:

Because the O'Neil Basin route passes through undeveloped federal lands, it seems to me that it would probably cross many roadless areas, thus rendering them unsuitable for preservation as wilderness in direct violation of the Federal Land Management and Policy Act. Because the Secretary of the Interior (through the Bureau of Land Management) has a responsibility to maintain an ongoing inventory program to identify roadless areas on the public lands, concentrating first on areas of critical environmental concern such as this proposed power line route (see Sec. 201(a) of the Act), no route, such as the O'Neil Basin route, which may adversely affect roadless areas can be adopted until an inventory of lands along the route shows that it will not cross any roadless areas.

Comment 25-4:

A study has not been made of the primitive values of the four routes nor of the roadless areas more than 5000 acres as required in the BLM Organic Act of 1976.

Comment 27-1:

This would have adverse impact on wild lands adjacent to the Jarbidge Wilderness, itself. Some of these wildlands, themselves, may be candidates for BLM wilderness study at a later date.



Comment 28-1:

Section 603(c) of the new Bureau of Land Management Organic Act would seem to restrict your authority to approve the Sierra Pacific route. I have not yet had an opportunity to study the route in exact detail, but I would be very surprised if their preferred route did not traverse a potential wilderness section as defined in the act.

The main argument used by the ego inflated executives of Sierra Pacific Power is monetary. They argue that the O'Neil Basin route is less costly for them to build. They do not consider the costs involved in delay. If the O'Neil route is approved, there will almost certainly be a court battle based on the Organic Act. Thus, it may actually prove to be less expensive for the power company to build along the highways.

Response: (Federal Land Policy and Management Act - Section 201(a), Areas of Critical Environmental Concern and 603, Roadless Areas.)

The Federal Land Policy and Management Act of 1976 directs, in Section 201(a) that the Secretary shall prepare and maintain an inventory of all public lands and their resources and other values, giving priority to areas of critical environmental concern.

Further, the act directs, in Section 603(a) that the Secretary shall review those roadless areas of five thousand acres or more of national resource lands identified during the above inventory as having wilderness characteristics described in the Wilderness Act of September 3, 1964. This inventory and review would be accomplished prior to granting a right-of-way along the applied-for route or any alternative.

Regulations to implement the above sections of the act have not been promulgated at this time. Specific criteria have not yet been developed to evaluate the wilderness characteristics of national resource lands, however, other federal land management agencies have operating regulations and criteria for Wilderness area identification.

Comment 19-1:

(P. 6) The highway corridor "generally coincides with existing powerline rights-of-way." The other proposed routes either do not follow existing corridors at all, or follow them only when they come close to the highway corridor. The EIS should point out that there are already several lines of varying height and closeness to the highway and that this transmission line would be, in fact, only an additional line.



Comment 21-1:

I must also point out that the proposed O'Neil route is probably illegal under the new Federal Land Policy and Management Act of 1976, signed by the President on October 21, 1976. Two provisions of this law lead me to this conclusion: Sec. 503, relating to right-of-way corridors, and Sec. 603, relating to wilderness studies.

Section 503 of the new Federal Land Management and Policy Act states:

"In order to minimize adverse environmental impacts and the proliferation of separate rights-of-way, the utilization of rights-of-way in common shall be required to the extent practical ...." (emphasis mine)

There are already numerous transmission and transportation rights-of-way along the Highway Corridor. Use of this corridor for the proposed Sierra Pacific power line is certainly practical. Cost is not unreasonable, and additional non-monetary benefits are gained. It thus seems clear to me that the intent of the law will not be fulfilled if a totally new right-of-way, the O'Neil Basin route, is selected for this proposed power line when common use of the Highway Corridor route with other transmission and transportation facilities is practical.

Comment 23-1:

It is time to plan for the future and therefore weigh the long range consequences of this project. The board realizes that the use of an existing corridor may result in a higher initial cost, but would like to point out that once watershed and rangeland are destroyed it is virtually impossible to return it to a natural state.

Therefore, by unanimous decision, the Washoe County Game Management Board strongly recommends the use of existing highway corridors for the proposed installation.

Comment 25-1:

One of the advantages of the Highway corridor would be that it generally coincides "with existing powerline rights-of-way." (Pg. 6). It is our belief that all utility lines should be confined as much as possible to single corridors. We do not wish to see Nevada covered with a network of transmission lines carrying power from one state to another.



Since the Highway Corridor is already developed and used for a multitude of non-scenic purposes, the presence of transmission lines would not detract from the location.

Comment 31-1:

We consider that following established transmission line routings, and in particular, the "Highway Corridor", is the only logical route which can be successfully argued as in consideration of the natural resource of the State.

Comment C-1:

Also, I believe that since Highway 80 is already a corridor both for power lines and for transportation, that this should be taken advantage of, because there would be a lot less access problems, there would be less access roads and less potential damage to wild areas.

Response: The Federal Land Policy and Management Act of 1976 (BLM's Organic Act) was signed after the Oreana-Hunt DES was published. The passage of this law is reflected in the FES. The Act's mandate for use of utility and transportation corridors is discussed in Chapter 6, p.6-2 of the final statement.

The Highway Corridor, analyzed in the environmental statement, would basically follow existing utility and transportation rights-of-way.

## 22. Land Requirements and Surface Disturbance

Comment 32-2:

(Comment letter 32 (Sierra Pacific Power Company) contains numerous comments directly related to land requirements and surface disturbance. For brevity, the reader is referred to Appendix L, Letter 32, Attachments B, F, G, K, M, R, T, and the table included with Attachment B. Also see letters 33, 54, and 55 for related data.)

Response: These comments are all directly related to Table 1-1 (Summary of Land Requirements and Surface Disturbance, in the draft statement). The primary difference in surface disturbance between that shown in Table 1-1 and the table submitted with this comment letter (No. 32, attachment B) is due to differing assumptions made in determining access needs. In both cases, construction access was determined by map inspection utilizing topographic maps. Surface disturbance in the DES was compiled on the



basis of total ground construction and also included the option of utilizing helicopter placement of towers. Surface disturbance, as shown in comment 32-2, was on the basis of helicopter installation where overland travel was not feasible. Under this assumption, special preparation of a leveled crane pad is unnecessary. Soil disturbance due to the construction of crane pads is four acres or less depending on the corridor considered.

Since both sets of data reflecting surface disturbance were determined independently through map inspection utilizing similar criteria, the data reflected in Table I-1 of the DES will be used to indicate surface disturbance impacts in the final statement. Surface disturbance data submitted with comment letter 32 will be referenced in the body of the final statement as necessary. Both sets of data for total surface disturbance with use of helicopters do differ to varying degrees, however, a level of accuracy is demonstrated for both sets of data in a difference of less than 2 percent for the Adobe Range Corridor and less than 1 percent difference for the Metropolis Corridor.

### 23. Impacts (General)

Comment 32-19:

#### SECTION V UNAVOIDABLE ADVERSE IMPACTS

##### Page 179, Comparative Impacts

A confusing aspect of Table V-1 is that up to this point in the draft EIS impact quantification was tabulated from an adverse standpoint. For example, a segment with a large number of acres, miles, tons, etc., would be an indication of the magnitude of impact. Table V-1 is analyzing the absence of impact from a positive standpoint. If this table is to remain in the EIS, then it might be more meaningful if an attempt was made to show the level of impact reduction through the use of a low, medium, high, or a one through five rating system. For example, what is the relative difference in impact reduction between the O'Neil and Highway corridors on the surface water resource for the Stateline to Hunt segment? The importance of this relative difference is that in some cases it might be so slight as to be insignificant, but for some subjective reason it was included in the tabulation. The elimination of the primary access road requirement as explained earlier in this report will significantly change the identification and intensity of component impacts. Attached is an attempt to rate the impact on components by corridor segment, utilizing the low, medium, high system. A low rating, for example, would indicate the relative to a specific environmental



component, that that segment is only slightly better than one of the other segment alternatives. A high rating would indicate a more significant difference between the segment alternatives. Absence of a rating would indicate no measurable environmental impact difference between corridors.

Response: Table 5-1 as shown in the DES is not an analysis of corridor segments which indicates an absence of impact. It is merely an indication, from the positive standpoint, of which corridor segment would have a lesser degree of impact for that environmental component analyzed, after the mitigation measures were applied. It is felt that a rating system as proposed in this comment would be too subjective and beyond the scope of the environmental statement.

The table attached to the comment (see comment letter No. 32, Appendix L), was reviewed and was felt to exhibit a high degree of bias and has not been incorporated in the body of the statement.

USGS Comment 56-1:

No mention of potential landslide or earth-slump hazards to transmission line towers or new access roads was found in the discussions of geologic hazards (for example, p. 32 and p. 36) or elsewhere in the statement. Areas considered to have a moderate to high landslide susceptibility or incidence are scattered within 30 miles of the Humboldt River, chiefly at the following places within the corridors that are under consideration for the proposed construction: (1) from 5 to 20 miles southeast of Rye Patch Reservoir; (2) in the vicinity of Golconda; (3) northeast of Battle Mountain, near North Battle Mountain and Stony Point; and (4) north and west of the Humboldt River from a point near Carlin to a point where the Adobe Range Corridor and the Metropolis Corridor cross the North Fork Humboldt River, 25 miles northeast of Elko. The foregoing areas are delineated more accurately on a recently published map entitled Preliminary landslide overview map of the conterminous United States by D. H. Radbruch-Hall and others: Miscellaneous Field Studies Map MF-771, U. S. Geological Survey, Menlo Park, California, 1976.

Response: The recently published map indicated by the above Geological Survey comment was not known to be available at the time the draft statement was prepared. An analysis of the Miscellaneous Field Studies Map MF-771 in relation to the corridors considered in this statement indicate that the following numbers of potential landslide or earth-slump hazard areas may be crossed:



Potential Landslide Or  
Earth-Slump Areas

O'Neil Corridor	2
Highway Corridor	3
Adobe Range Corridor	3
Metropolis Corridor	3

Parameters utilized in developing the data depicted on the Miscellaneous Field Studies Map MF-771 are important when considering the relationship of the areas shown in relation to the corridor for this statement. Some of these parameters are:

- 1) "Information shown on the map is highly generalized, owing to the small scale and the lack of precise landslide information for much of the country, which necessitated extrapolation of data over wide areas. This map, therefore, is not suitable for local planning or actual site selection."
- 2) "Units or parts of units having more than 15 percent of their areas involved in landsliding were placed in the category of highest incidence; units having less than 15 percent but more than 1.5 percent of their areas involved in landsliding were placed in the middle category; and those with less than 1.5 percent of their areas involved are in the category of lowest incidence."
- 3) "In compiling the present map, particularly in parts of the Western United States, it was necessary to rely heavily on the relatively small percentage of geologic maps and reports that give detailed information on slope stability conditions in scattered areas."
- 4) "The susceptibility categories are largely subjective, as insufficient data are available for more precise determination."

Because of the general nature of the data and the lack of detailed site information, Sierra Pacific Power Company would conduct an intensive site analysis to determine soil and geological structure for proper setting of tower foundations.







## APPENDICES



## APPENDICES



## STRATEGY FOR ENVIRONMENTAL ASSESSMENT

(ENCL. 2 OF MEMORANDUM, SEPTEMBER 25, 1975)



STRATEGY FOR ENVIRONMENTAL ASSESSMENT-  
NORTHERN NEVADA ELECTRICAL POWER GENERATION & TRANSMISSION  
SIERRA PACIFIC POWER COMPANY

Background:

Sierra Pacific is a relatively small, investor owned utility serving North Central Nevada and Eastern California. The prime load center is the Reno - Lake Tahoe area, but irrigation in North Central and projected growth in Northern Nevada has outstripped the companies capabilities to produce and import power. In order to increase their capability, a 5-year plan has evolved that combines importing reliable power from other companies to meet immediate needs and developing additional coal-fired generating capability of their own to meet projected demands through 1985. In brief, the power sources, transmission lines and timing of development are:

<u>Power Source</u>	<u>Transmission</u>	<u>Load Center</u>	<u>Date needed to meet demand</u>
<u>Phase I</u>			
Company-owned from Tracy Gas fired plant	Tracy to Oreana 230/345 kv powerline (new)	Lovelock (irrigation	Energize May 1976 @120 kv
<u>Phase II</u>			
Contact Purchase 150 MW Utah P&L via Idaho Power Co. lines to Hunt, Idaho	Oreana to Hunt 230/345 kv Line (new)	Entire Service area	Energize Oct. 1977 @ 230 kv
<u>Phase III</u>			
Company-owned coal power plant 2-250 MW units	Will use above 230/345 kv powerline; plus Valmy to Austin- 230/345 intertie and a second 230/ 345 kv in parallel back to Tracy for unit 2 (new)	Entire Service area	On line unit 1-1980 unit 2-1982

The entire project involves separate facilities in point of time and sources of power and yet in total are related as is any component of a system.



### The Issue:

The August 26 Departmental briefing by Sierra Pacific Power Company explained their plan for meeting both existing and future load growth demands. The question is how to organize the resources available to meet the requirements of NEPA and to the extent possible, meet the time schedule of energy demand for several inter-related facilities?

### The Strategy:

The Department has assigned lead agency responsibility to BLM for the powerplant EIS and recognizes the rationale for treating the Oreana to Hunt power line as a separate but related project. The following strategy is based on full public disclosure. That is, news releases, contacts with concerned groups and, if needed, a discussion meeting to explain BLM's approach to NEPA compliance for the separate, but related projects. If controversy develops during the public awareness stage, the strategy will be re-assessed. Based on the phases identified above and still maintaining full opportunity for public review of environmental impacts, the following strategy is proposed:

### Action:

#### PHASE I

The Tracy to Oreana transmission line will be assessed first by using an Environmental Analysis Record which will be completed and offered for public review. If found environmentally acceptable, the right-of-way will be granted.

### Rationale:

- \* This line will be energized @ 120 kv from the Tracy Generating Station to meet immediate demand for irrigation power.
- \* Should the other phase not be built, this line could continue to operate in this manner.
- \* Intensive investigation reveals that this route does not exhibit characteristics whereby significant environmental impacts will result from the first power line use. The area is impacted by an interstate highway; an existing 120 kv line; a gas transmission line; power distribution lines; telephone lines; county roads and mining activity. The relationship to future projects and full awareness of a future additional line will be shown and the adequacy of the route as a corridor assessed.



## PHASE II

### Action:

The Oreana to Hunt power line will be analyzed in an environmental impact statement.

(Note:) The section from Valmy to Oreana will be treated as a corridor for two power lines and the environmental impacts assessed on this basis because of the proposed line for unit 2 of the power plant.

### Rationale:

- \* Preliminary review indicates potential for significant impacts especially northeast from the Valmy substation to Idaho, therefore an EIS is needed.

- \* Imported power will continue to flow to Tracy regardless of whether or not the coal-fired plant is built at Valmy.

## PHASE III

### Action:

The power plant and the two power lines emanating out of it, plus all ancillary facilities will be analyzed in a second EIS.

### Rationale:

- \* A decision on the plant, its transmission lines directly emanating from it and on all ancillary facilities will have to await an environmental impact statement.

- \* Project design specifies and environmental data will not be available until at least February 1976, too late for phase II.

## APPENDIX B

### AIR QUALITY

Nevada State air quality information for total suspended particulates (TSP) is summarized in this appendix. The data is presented two ways: as the geometric mean (average for the year); and as 24-hour maxima (the highest 24-hour reading per calendar quarter. A monitoring station with a low geometric mean and high, occasional 24-hour maxima indicates the source is probably natural dust pollution. A high geometric mean indicates a persistent problem, suggesting a localized source of pollution, e.g., spoil piles from a mining operation.

Also included is a summary of 1972-1975 air quality data monitored by the Washoe County District Health Department in Reno, Nevada.



TABLE B-1  
TOTAL SUSPENDED PARTICULATES (ug/m<sup>3</sup>)  
24 HOUR MAXIMUM CONCENTRATION  
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARD-150 ug/m<sup>3</sup>

Monitoring Station	1972 Quarters				1973 Quarters				1974 Quarters			
	1	2	3	4	1	2	3	4	1	2	3	4
Fernley	176	116	149	154	230	180	198	181	224	173	233	---
Lovelock	---	---	---	--	---	--	---	---	475	432	103	91
Winnemucca	254	89	270	76	124	271	95	112	146	127	388	147
Battle Mountain	---	---	---	---	---	---	---	---	---	---	208	---
Elko	145	92	115	66	99	104	228	113	---	---	---	---

Excerpts from "State of Nevada Air Quality Regulations":

ARTICLE 5 - OPEN BURNING

- 5.1 The open burning of any combustible refuse, waste, garbage, oil, or for any salvage operations, except as specifically exempted, is prohibited.
- 5.2 Open burning exempted from these regulations shall consist of:
  - 5.2.1 Open burning approved in advance by the Director.
  - 5.2.2 Open burning concurred in by the Director and authorized by an officer of the State or its political subdivisions for the purpose of weed abatement, conservation, disease control, game or forest management, personnel training, or elimination of hazards.
  - 5.2.3 Open burning for agricultural purposes and management except where prohibited by local ordinances or regulations.
  - 5.2.4 Open burning at single family residences, unless prohibited by local ordinances or regulations, in all areas of the State except: in and within one mile of the boundaries of the following cities and towns: Babbitt, Battle Mountain, Caliente, Carlin, East Ely, Elko, Ely, Fallon, Fernley, Gabbs, Gardnerville, Hawthorne, Lovelock, McGill, Minden, Tonopah, Virginia City, Weed Heights, Wells, Winnemucca, and Yerington; and on the Nevada side of the Tahoe Basin, in Carson City and those portions of Douglas and Lyon Counties that are within one mile of the Carson City line.
  - 5.2.5 Open burning of small wood fires for recreational, educational, ceremonial, heating, or cooking purposes.
- 5.3 All open burning must be attended and controlled at all time to eliminate fire hazards.

ARTICLE 7 - PARTICULATE MATTER

- 7.3 Fugitive Dusts:
  - 7.3.1 No person shall cause or permit the handling, transporting, or storing of any material in a manner which allows, or may allow, controllable particulate matter to become airborne.



- 7.3.3 No person shall disturb or cover any topsoil prior to obtaining a registration certificate or operating permit for the purpose of clearing, excavating, or leveling land of 8 hectares (20 acres) or more for any deposit of any foreign material covering land of 8 hectares (20 acres) or more is required except for agricultural land.

## ARTICLE 12 - AMBIENT AIR QUALITY STANDARDS

- 12.1 The following air contaminant concentrations shall not be exceeded at any single point in the ambient air:

12.1.1 Sulfur oxides as sulfur dioxide

Annual arithmetic mean . . . . . 60 ug/m<sup>3</sup> (0.02 ppm)  
Maximum 24-hour concentration . . . 260 ug/m<sup>3</sup> (0.1 ppm)  
Maximum 3-hour concentration . . . 1,300 ug/m<sup>3</sup> (0.5 ppm)

12.1.2 Particulate matter

Annual geometric mean . . . . . 60 ug/m<sup>3</sup>  
Maximum 24-hour concentration . . . 150 ug/m<sup>3</sup>

12.1.3 Carbon monoxide

Maximum 8-hour concentration . . .10,000 ug/m<sup>3</sup> (9.0 ppm)  
Maximum 1-hour concentration . . .40,000 ug/m<sup>3</sup> (35.0 ppm)

12.1.4 Photochemical oxidant

Maximum 1-hour concentration . . . 160 ug/m<sup>3</sup> (0.08 ppm)

12.1.5 Hydrocarbons (nonmethane fraction)

Maximum 3-hour concentration  
between 6:00 a.m. and 9:00 a.m. . . 160 ug/m<sup>3</sup> (0.24 ppm).

12.1.6 Nitrogen dioxide

Annual arithmetic mean . . . . . 100 ug/m<sup>3</sup> (0.05 ppm)

12.2 All values corrected to reference conditions

12.3 Definitions:

ug/m<sup>3</sup> - micrograms per cubic meter  
ppm - parts per million by volume

12.4

These ambient air quality standards are minimum goals and it is the intent of these regulations to protect the existing quality of Nevada's air to the extent that it is economically and technically feasible.



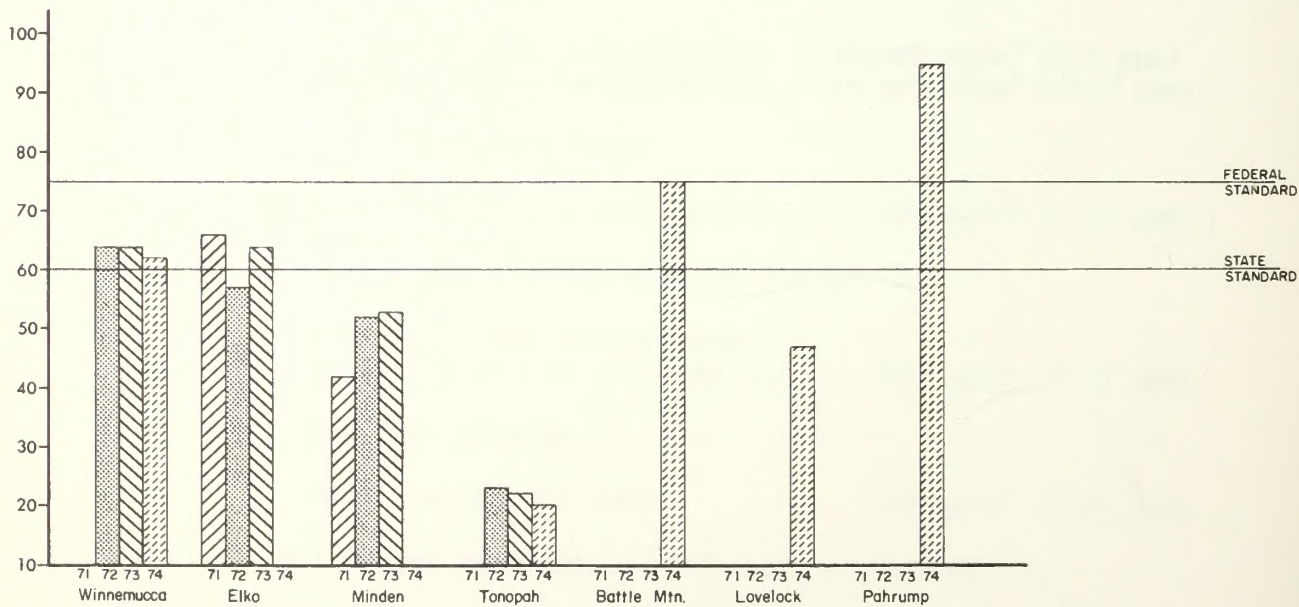
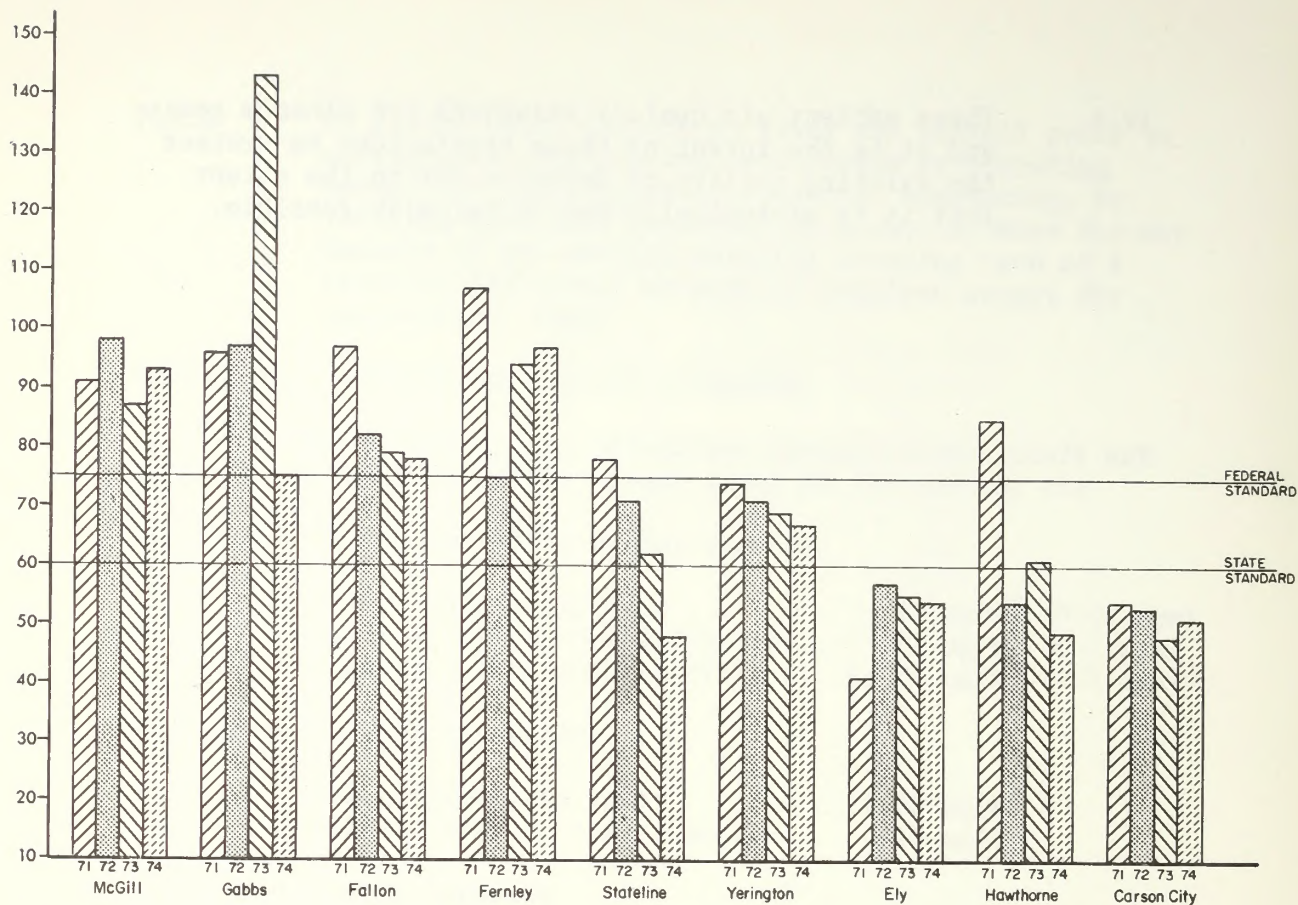
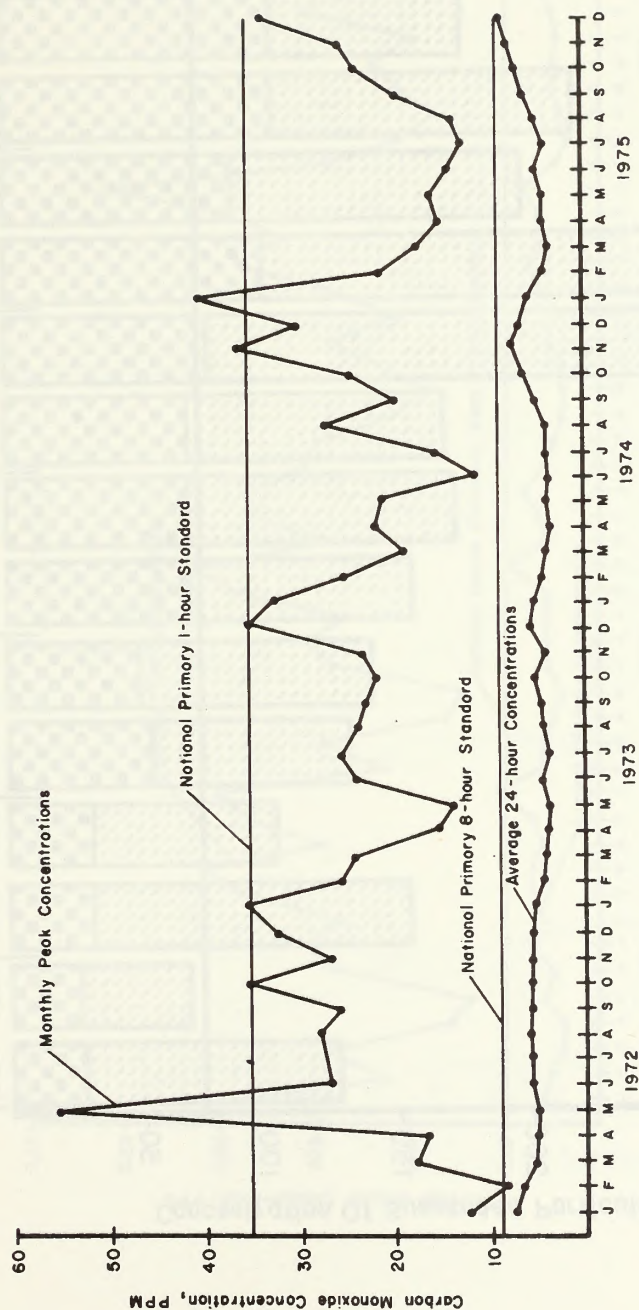


FIGURE B-1 SUSPENDED PARTICULATES  
1971-1972-1973-1974

$\text{Mg/m}^3$   
geometric mean

NOTE: Monthly peak concentrations should not be interpreted as violations of National 1-Hour Standard, since peak concentrations do not persist as long as 1 hour.

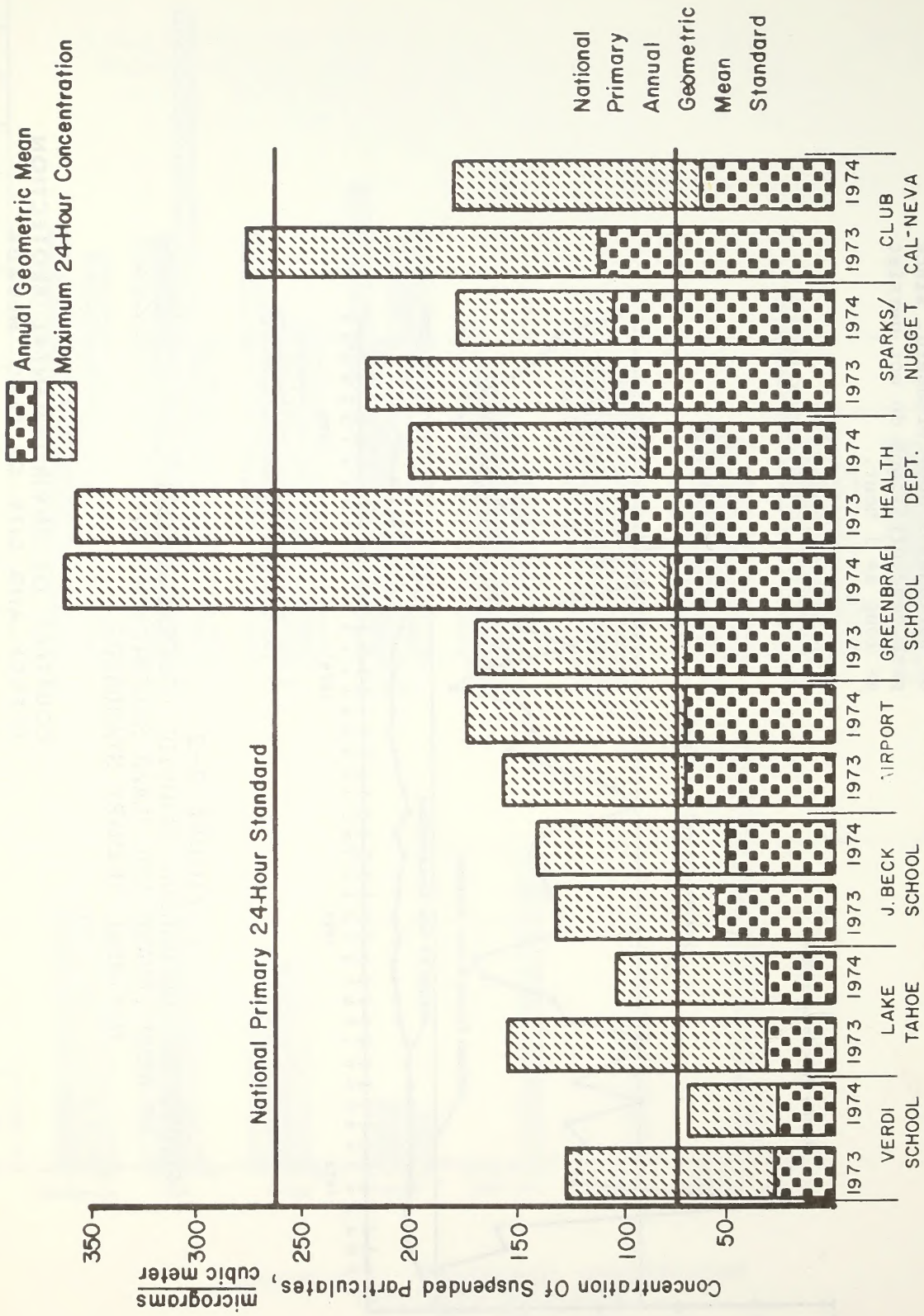


**FIGURE B-2**  
COMPARISON OF CARBON MONOXIDE CONCENTRATIONS  
AT RENO (EVANS AND PLAZA STREETS) WITH  
NATIONAL PRIMARY STANDARDS

COURTESY OF ENVIRONMENTAL PROTECTION  
AGENCY AND CITY OF RENO, NEVADA

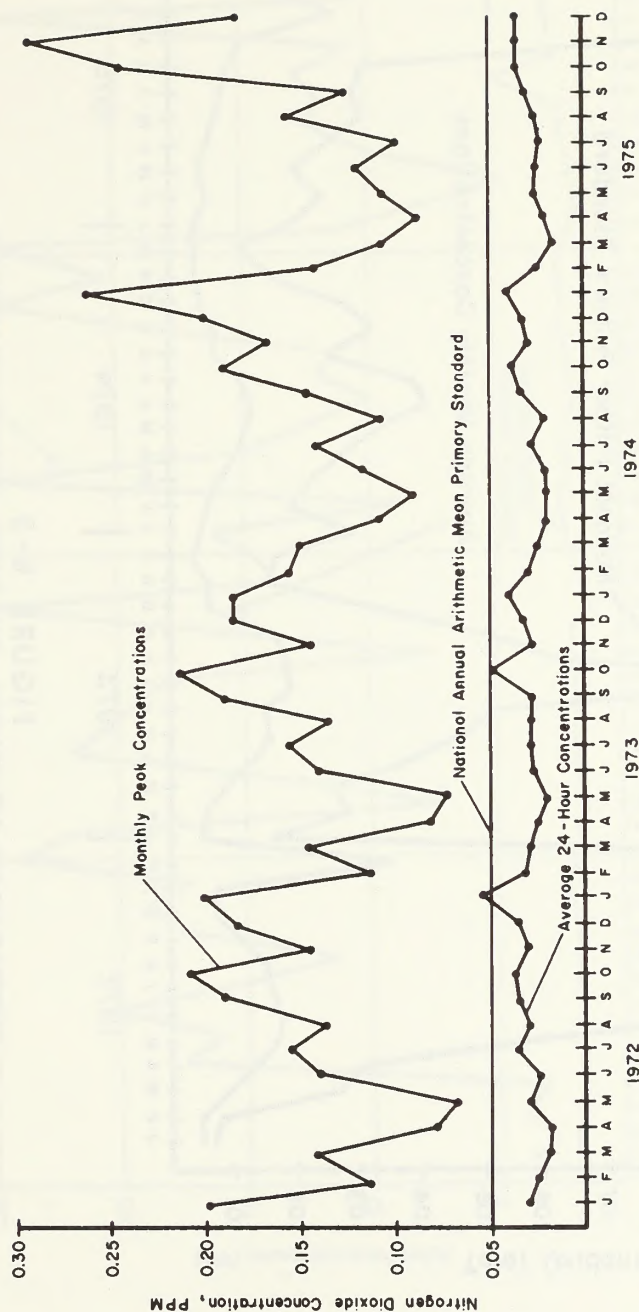


FIGURE B-3



COMPARISON OF SUSPENDED PARTICULATE  
CONCENTRATIONS WITH NATIONAL PRIMARY STANDARDS  
(WASHOE COUNTY DISTRICT HEALTH  
DEPARTMENT MONITORING STATIONS)

COURTESY OF ENVIRONMENTAL PROTECTION  
AGENCY AND CITY OF RENO, NEVADA



NOTE: Highest 24-hour concentrations during each month should not be interpreted as violations of the National Annual Arithmetic Mean Primary Standard. No violations of this standard occurred during the period 1972-1975.

**FIGURE B-4**  
 COMPARISON OF NITROGEN DIOXIDE CONCENTRATIONS  
 AT RENO (EVANS AND PLAZA STREETS) WITH  
 NATIONAL PRIMARY STANDARDS



NOTE: Monthly peak concentrations should not be interpreted as violations of the National 1-Hour Primary Standard.

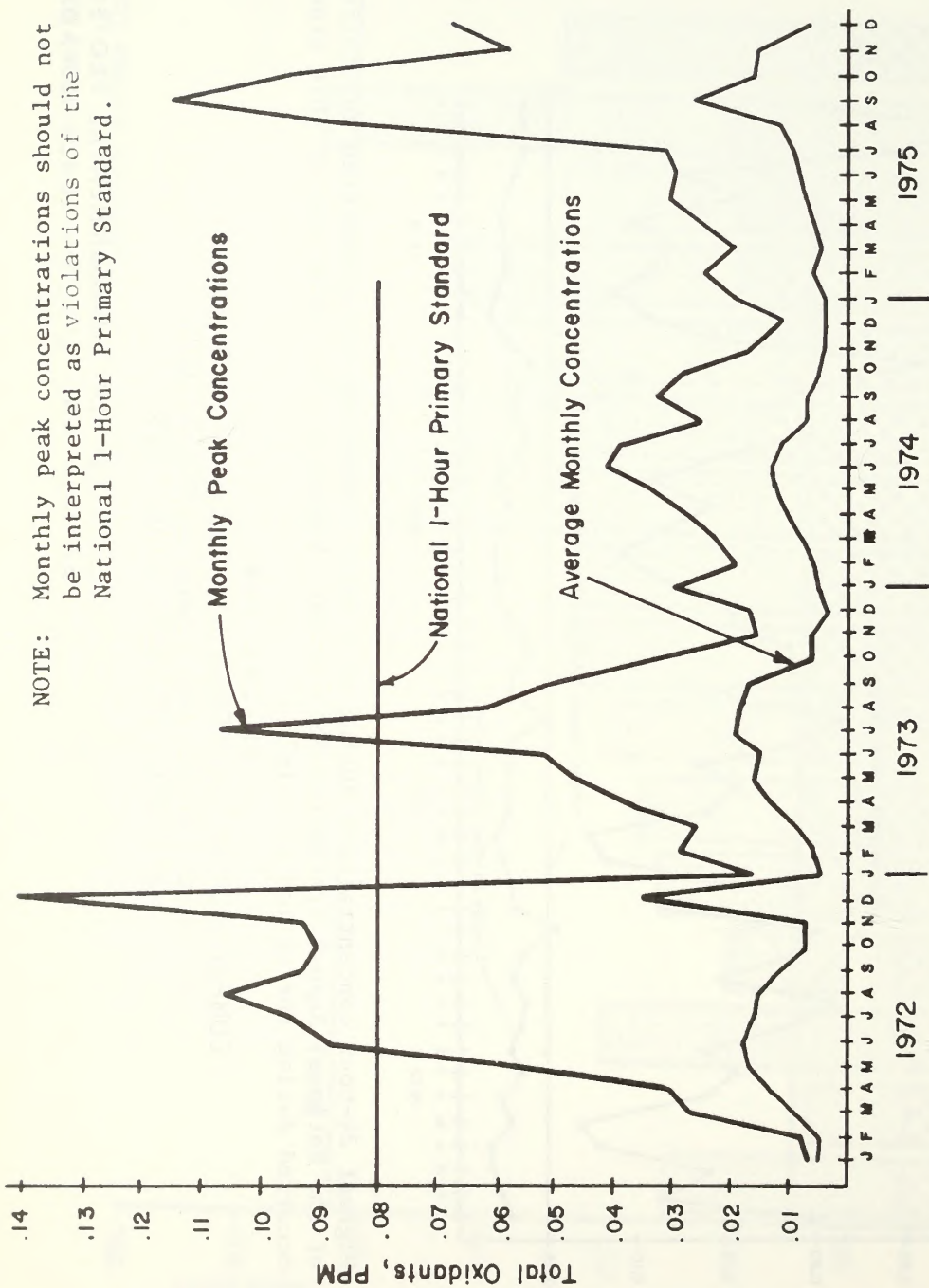


FIGURE B-5  
COMPARISON OF TOTAL OXIDANT CONCENTRATIONS  
AT RENO (EVANS AND PLAZA STREETS) WITH  
NATIONAL PRIMARY STANDARDS

COURTESY OF ENVIRONMENTAL PROTECTION  
AGENCY AND CITY OF RENO, NEVADA

NOTE: Monthly peak and average concentrations are not comparable with the National Primary 3-Hour Standard.

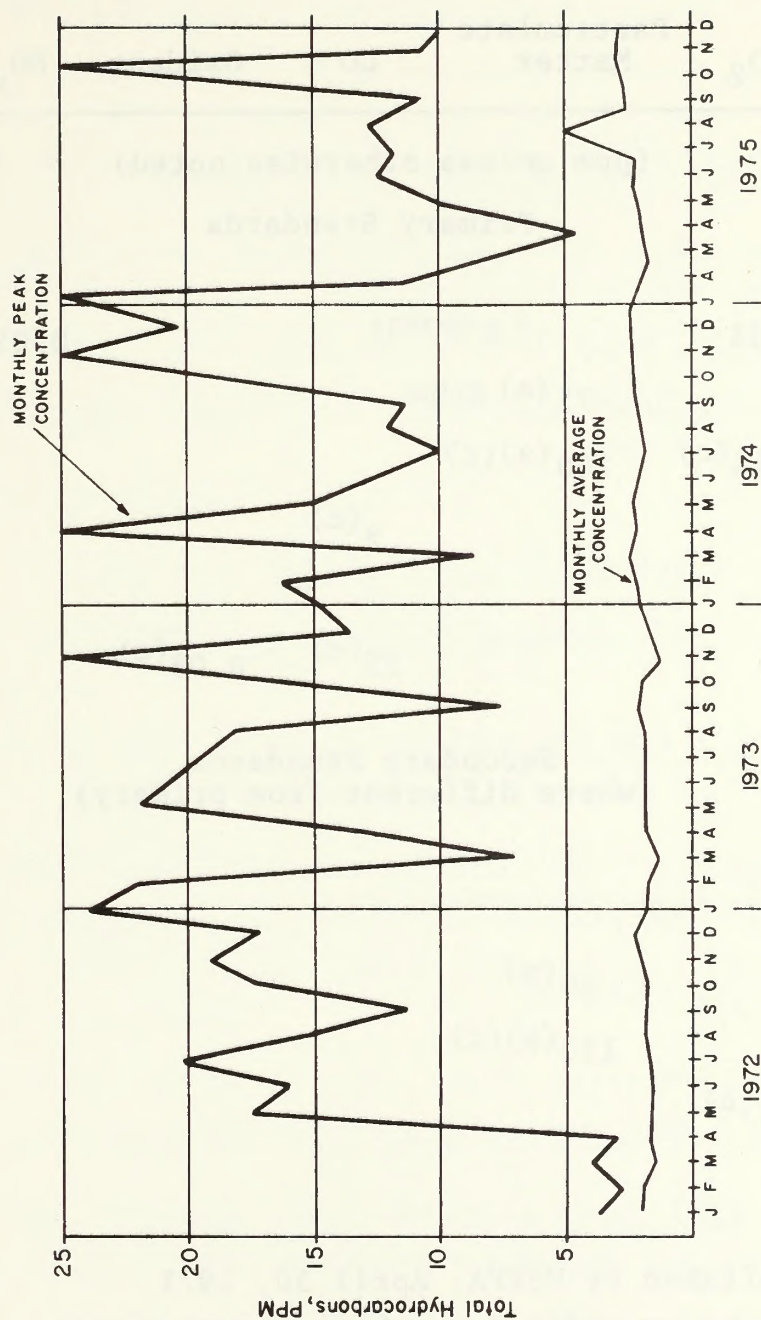


FIGURE B-6  
TOTAL HYDROCARBON CONCENTRATIONS  
AT RENO (EVANS AND PLAZA STREETS)

COURTESY OF ENVIRONMENTAL PROTECTION  
AGENCY AND CITY OF RENO, NEVADA



TABLE B-2  
FEDERAL AIR QUALITY STANDARDS<sup>(b)</sup>

	SO <sub>2</sub>	Particulate Matter	CO	Oxidant	NO <sub>x</sub>	HC
(ppm unless otherwise noted)						
Primary Standards						
Annual						
(arith. mean)	0.03				0.05	
(geom. mean)		75 <sup>(a)</sup>				
24-hr. max	0.14 <sup>(c)</sup>	260 <sup>(a)(c)</sup>				
8-hr. max			9 <sup>(c)</sup>			
3-hr. max						0.24 <sup>(c)</sup>
1-hr. max			35 <sup>(c)</sup>	0.08 <sup>(c)</sup>		

Secondary Standards  
(where different from primary)

Annual		
(arith. mean)		
(geom. mean)		60 <sup>(a)</sup>
24-hr. max		150 <sup>(a)(c)</sup>
3-hr. max	0.5 <sup>(c)</sup>	

NOTES: (a)  $\mu\text{g}/\text{m}^3$

(b) As published by USEPA, April 30, 1971

(c) Not to be exceeded more than once per year

COURTESY OF ENVIRONMENTAL PROTECTION  
AGENCY AND CITY OF RENO, NEVADA

## APPENDIX C

### SOILS



Dominant soil taxonomic units that occur in the 12 soil groups.  
(See p. 2-12 for soil taxonomic relationships.)

Group #1

None.

Group #2

Typic Natrargid - fine 1/ loamy, mixed 2/, mesic 3/, 0-2% slopes, saline and gravel substratum. These soils are usually corrosive to concrete and steel by the presence of ionic sulphur.

Typic Torriorthent - fine silty, mixed calcareous, mesic, 0-2% slopes, saline and, occasionally flooded.

Typic Torripsamments - mixed, mesic, 2-8% slopes.

Aeric Fluvaquents - coarse loamy, mixed, 0-2% slopes, saline-alkali, occasionally flooded.

Group #3

Entic Durorthids - loamy, mixed, mesic, shallow, 2-8% slopes.

Duric Camborthids loamy-skeletal, mixed, mesic, 4-15% slopes, stony.

Xerollic Haplargids - fine montmorillonitic, mesic, 8-15% slopes.

Group #4

Fluvaquentic Haplaquolls - fine loamy, mixed, mesic, calcareous, 0-2% slope, saline-alkali, frequently flooded.

Typic Torriorthents - coarse, silty, mixed, calcareous, mesic, 0-2% slopes, strongly dissected.

Group #5

Xerollic Durargids - fine, montmorillonitic, mesic, shallow, 0-15% slopes.

Typic Natrargid - fine, montmorillonitic, mesic, shallow, 0-15% slopes. These soils may contain enough sulphur to be corrosive.

1/ Fine refers to clay size particles.

2/ Mixed refers to more than one kind of clay.

3/ Mesic refers to annual soil temperature between 47 F. and 50 F.

to concrete and steel.

Duric Camborthid - fine loamy, mixed mesic, 0-15% slopes.

Group #6

Aridic Durixerolls - fine montmorillonitic, frigid, 4-15% slopes.

Xerollic Haplargid - clayey skeletal, montmorillonitic, frigid, 30-75% slopes.

Xerollic Haplargids - fine, montmorillonitic, frigid, 8-30% slopes, stony.

Group #7

Xerollic Durargid - fine loamy, mixed 8-30% slopes, some stones.

Lithic Xerollic Camborthid - loamy, mixed, frigid, 4-30% slopes and stony.

Group #8 and #12

Mollic Durorthid - coarse silty, mixed, mesic.

Mollic Calciorthid - coarse silty, mixed, mesic.

Group #9

Aridic Argixerolls - clayey skeletal, montmorillonitic, frigid, 30-50% slopes, very stony.

Xerollic Camborthid - fine loamy, mixed, mesic, 30-50% slopes.

Lithic Argixerolls - clayey skeletal, montmorillonitic, frigid, 5-50% slopes, stony.

Groups #10 and #11

Pachic Cyroborolls - loamy skeletal, mixed 30-70% slopes.

Pachic Cyroborolls - fine loamy, mixed, mesic, 4-70% slopes.

Lithic Cyroborolls - loamy skeletal, mixed, 4-70% slopes, stony.



TABLE C-1

SOIL TAXONOMIC DESCRIPTIONS  
AND SOME IMPORTANT PROPERTIES

Soil Taxonomic Unit (sub-group)	Common Occurrence Soil Group No.	Land Form	Drainage	Erosion Hazard	Annual Precip. (in.)	Depth (in.)	Texture (Subsoil)	Alkalinity	Permeability	Slope Per Cent
Aeric Fluvaquent	2	Flood Plain	Mod. Well		6-8	40+	Coarse	Strong	Rapid	0-2
Aridic Argixeroll	9	Mountain	Well	Severe	10-15	40+	Fine	Neutral	Slow	15-30
Aridic Durixeroll	6	Terrace	Well	Moderate	10-15	20-40	Fine	Neutral	Slow	4-15
Duric Camborthid	3-5	Terrace	Well	Moderate	6-8	40+	Medium	Moderate	Moderate	0-4
Entic Durorthid	3	Terrace	Well	Moderate	6-8	10-20	Medium	Moderate	Moderate	2-8
*Fluvaquentic Haplaquoll	4	Flood Plain	Poor	Slight	6-8	40+	Mod. Fine	Strong	Slow	0-2
Lithic Argixeroll	9-10-11-12	Mountain	Well	Severe	10-20	10-20	Fine	Neutral	Slow	5-50
Lithic Cryoboroll	9-10-11-12	Mountain	Well	Severe	10-20	10-20	Medium	Neutral	Moderate	4-70
Lithic Xerollic Camborthid	7	Terrace	Well	Moderate	8-10	10-20	Medium	Moderate	Moderate	4-30
Mollic Calciorthid	8	Terrace	Well	Moderate	8-12	40+	Medium	Moderate	Moderate	4-16
Mollic Durorthid	8	Terrace	Well	Moderate	8-12	40+	Medium	Moderate	Moderate	4-16
Pachic Cryoboroll	10-11	Mountain	Well	Severe	10-20	40+	Medium	Neutral	Moderate	30-70
*Typic Natrargid	2-4-5	Terrace	Poor	Slight	6-8	40+	Fine	Strong	Slow	0-20
*Typic Torriorthent	2-4	Flood Plain & Terrace	Mod. Well	Severe	6-8	40+	Mod. Fine	Strong	Mod. Slow	0-2
Typic Torripsamant	2-4	Terrace	Well	Moderate	6-8	40+	Coarse	Moderate	Rapid	2-8
Xerollic Camborthid	3-9	Terrace & Mountain	Well	Severe	6-15	20-30	Mod. Fine	Moderate	Moderate	30-50
Xerollic Durargid	5-7	Terrace	Well	Moderate	8-10	10-20	Mod. Fine	Moderate	Moderate	8-30
Xerollic Haplargid	6	Terrace	Well	Moderate	10-14	40+	Fine	Neutral	Slow	4-15

\*May be corrosive to concrete and steel because of the presence of sulphur.

## APPENDIX D

## VEGETATION



## SALT DESERT SHRUB

### Big Greasewood Community

Big greasewood	<u>Sarcobatus vermiculatus</u>
Shadscale	<u>Atriplex confertifolia</u>
Budsage	<u>Artemisia spinescens</u>
Spiny hopsage	<u>Grayia spinosa</u>
Dalea	<u>Dalea polyadenia</u>
Spiny horsebrush	<u>Tetradymia spinosa</u>
Rubber rabbitbrush	<u>Chrysothamnus nauseosus</u>
Big saltbrush	<u>Atriplex lentiformis</u>
Squirreltail	<u>Sitanion hystrix</u>
Great Basin wildrye	<u>Elymus cinereus</u>
Saltgrass	<u>Distichlis stricta</u>
Alkali sacaton	<u>Sporobolus airoides</u>
Halogeton	<u>Halogeton glomeratus</u>
Inkweed	<u>Suaeda torreyana</u>
Pickleweed	<u>Allenrolfea occidentalis</u>
Tansy mustard	<u>Descurainia sophia</u>
Clasping pepperweed	<u>Lepidium perfoliatum</u>
Desert mentzelia	<u>Mentzelia multiflora</u>

### Shadscale Community

Shadscale	<u>Atriplex confertifolia</u>
Dryland greasewood	<u>Sarcobatus baileyi</u>
Budsage	<u>Artemisia spinescens</u>
Big sagebrush	<u>Artemisia tridentata</u>
Low rabbitbrush	<u>Chrysothamnus viscidiflorus</u>
Burro brush	<u>Hymenoclea salsola</u>
Mormon tea	<u>Ephedra nevadensis</u>
Spiny hopsage	<u>Grayia spinosa</u>
Spiny horsebrush	<u>Tetradymia spinosa</u>
Littleleaf horsebrush	<u>Tetradymia glabrata</u>
Dalea	<u>Dalea polyadenia</u>
Winterfat	<u>Eurotia lanata</u>
Cheatgrass	<u>Bromus tectorum</u>
Indian ricegrass	<u>Oryzopsis hymenoides</u>
Squirreltail	<u>Sitanion hystrix</u>
Desert needlegrass	<u>Stipa speciosa</u>
Gooseberry-leaf globemallow	<u>Sphaeralcea grossulariaefolia</u>
Clasping pepperweed	<u>Lepidium perfoliatum</u>
Tansy mustard	<u>Descurainia sophia</u>
Skeleton plant	<u>Lygodesmia spinosa</u>
Pursh locoweed	<u>Astragalus purshii</u>
Prince's plume	<u>Stanleya pinnata</u>

## FRESHWATER MARSH

Narrow-leaved cattail  
Alkali bulrush  
Three-Square bulrush  
Common tule  
Bulrush  
Sedge  
Rush  
Spike-rush  
Pondweed  
Widgeon grass  
Muskgrass

Typha angustifolia  
Scirpus robustus  
Scirpus americanus  
Scirpus acutus  
Scirpus nevadensis  
Carex spp.  
Juncus spp.  
Heleocharis spp.  
Potamogeton pectinatus  
Ruppia maritima  
Chara sp.

## MEADOW/RIPARIAN

Fremont cottonwood  
Willow  
Wood's rose  
Silver buffaloberry  
Streambank wheatgrass  
Slender wheatgrass  
Red top  
Spike bentgrass  
Saltgrass  
Creeping wild rye  
Foxtail barley  
Meadow barley  
Timothy  
Bluegrass  
Beard grass  
Sedge  
Rush  
Western yarrow  
Aster  
Bull thistle  
Cinquefoil  
Curly dock  
Common dandelion  
Rocky Mountain iris

Populus fremontii  
Salix spp.  
Rosa woodsii  
Shepherdia argentea  
Agropyron riparium  
Agropyron trachycaulum  
Agrostis alba  
Agrostis exarata  
Distichlis stricta  
Elymus triticoides  
Hordeum jubatum  
Hordeum brachyantherum  
Phleum pratense  
Poa spp.  
Polypogon monspeliensis  
Carex spp.  
Juncus spp.  
Achillea lanulosa  
Aster adscendens  
Cirsium vulgare  
Potentilla flabelliformis  
Rumex crispus  
Taraxacum officinale  
Iris missouriensis

## NORTHERN DESERT SHRUB

### Big Sagebrush Community

Big sagebrush  
Spiny hopsage  
Low rabbitbrush

Artemisia tridentata  
Grayia spinosa  
Chrysothamnus viscidiflorus



Spineless horsebrush  
 Littleleaf horsebrush  
 Bitterbrush  
 Mormon tea  
 Cheatgrass  
 Sandberg bluegrass  
 Nevada bluegrass  
 Idaho fescue  
 Squirreltail  
 Thurber's needlegrass  
 Great Basin wild rye  
 Bluebunch wheatgrass  
 Arrowleaf balsamroot  
 Tailcup lupine  
 Tapertip hawksbeard  
 Halogeton

Tetradymia canescens  
Tetradymia glabrata  
Purshia tridentata  
Ephedra nevadensis  
Bromus tectorum  
Poa secunda  
Poa nevadensis  
Festuca idahoensis  
Sitanion hystrix  
Stipa thurberiana  
Elymus cinereus  
Agropyron spicatum  
Balsamorhiza sagittata  
Lupinus caudatus  
Crepis acuminata  
Halogeton glomeratus

#### Low Sagebrush Community

Low sagebrush  
 Yellowbrush  
  
 Big sagebrush  
 Bitterbrush  
 Snowberry  
 Serviceberry  
 Currant  
 Shrubby eriogonum  
 Sandberg bluegrass  
 Idaho fescue  
 Squirreltail  
 Thurber's needlegrass  
 Bluebunch wheatgrass  
 Locoweed  
 Phlox  
 Mat eriogonum  
 Slender eriogonum  
 Penstemon  
 Foothill death camas  
 Lupine  
 Mulesear

Artemisia arbuscula  
Chrysothamnus viscidiflorus var.  
puberulus  
Artemisia tridentata  
Purshia tridentata  
Symphoricarpos longiflorus  
Amelanchier alnifolia  
Ribes spp.  
Eriogonum spp.  
Poa secunda  
Festuca idahoensis  
Sitanion hystrix  
Stipa thurberiana  
Agropyron spicatum  
Astragalus spp.  
Phlox spp.  
Eriogonum caespitosum  
Eriogonum microthecum  
Penstemon spp.  
Zigadenus paniculatus  
Lupinus spp.  
Wyethia amplexicaulus

#### Pinyon-Juniper Woodland

Single-leaved pinyon  
 Utah juniper  
 Big sagebrush

Pinus monophylla  
Juniperus osteosperma  
Artemisia tridentata

Low sagebrush  
Rubber rabbitbrush  
Yellowbrush  
  
Prickly phlox  
Mormon tea  
Squaw tea  
Buckwheat  
Spiny hopsage  
Bitterbrush  
Serviceberry  
Skeleton plant  
Cheatgrass  
Sandberg bluegrass  
Squirreltail  
Indian ricegrass  
Great Basin wild rye  
Needle and thread

Artemisia arbuscula  
Chrysothamnus nauseosus  
Chrysothamnus viscidiflorus var.  
puberulus  
Leptodactylon pungens  
Ephedra nevadensis  
Ephedra viridis  
Eriogonum spp.  
Grayia spinosa  
Purshia tridentata  
Amelanchier alnifolia  
Lygodesmia spinosa  
Bromus tectorum  
Poa secunda  
Sitanion hystrix  
Oryzopsis hymenoides  
Elymus cinereus  
Stipa comata

#### ENDANGERED FLORA

Astragalus porrectus  
Eriogonum anemophilum  
Machaeranthera leucanthemifolia

#### THREATENED FLORA

Astragalus pterocarpus  
Cryptantha interrupta  
Draba douglasii  
Lepidium nanum





## APPENDIX E

### REVEGETATION



Revegetation techniques have met with varying degrees of success in the Great Basin region. Success generally depends on favorable terrain, soil, and rainfall conditions, any or all of which can be limiting factors in Nevada.

As a whole, the state is subject to extreme drought, with many of the basins containing strongly alkaline or saline water. Temperature extremes range from -20 degrees Fahrenheit to over 100 degrees Fahrenheit. Lack of rain in the summer also precludes plant species which otherwise might be able to survive within this temperature range.

Many of the soils are low in available nutrients, or contain excess salt or alkali which only a few plants can tolerate. Heavy expansive clay soils in some areas are adverse to plants requiring good drainage and soil aeration.

Strong and persistent seasonal winds also create a problem for new vegetative growth. A sand blast effect is felt in areas of loose soil, and in winter the result is blowing snow particles. Wind-blown alkali would injure many non-native plants.

As a general rule, seeding can be successfully done where the average annual precipitation is 8-10 inches or higher. Revegetation of the salt desert shrub zone, characterized by shadscale saltbrush, is virtually impossible due to the arid climate (an average of slightly over 4 inches of rain in western Nevada). On the other hand, attempts to revegetate the sagebrush zone have been relatively successful.

#### A Guide to Unsuitable Soil Conditions (from Artz, et al., 1970)

1. Soils that are salt or alkali-affected throughout the upper 18".
2. Soils with cobbles or stones at the soil surface that would prevent use of available seeding equipment.
3. Soils on slopes greater than 30 percent (sometimes slopes greater than 20 percent).
4. Soils that have more than 4 inches of sand coarser than loamy-fine sand at the surface, regardless of underlying texture, and which occur in areas with less than 12 inches annual precipitation. Seedlings are quite difficult to establish on these soils unless there are predictable summer rains, as in Southern Nevada.
5. Soils that are clay-textured throughout, crack deeply from the surface on drying, and tend to spontaneously form a

granular surface as the summer progresses (Vertisols).

6. Soils with less than 6 inches of topsoil (A horizon) with an abrupt boundary to an underlying claypan, i.e., very clayey B2t horizon.

7. Soils less than 12- to 20-inches deep over clean gravel, hardpan, or bedrock, depending on the climate and water capacity of the soil:

8. Soils with light colored topsoil which is commonly crusted between plants. The crust has numerous bubble-like pores (vesicles). (Typic Subgroups of the Aridisols.)

Undoubtedly there are circumstances where soils identified as "unsuitable" could be successfully seeded and individual judgments must be made. Climate and inherent fertility are, in part, reflected in these groupings by soil properties, but separate consideration should be helpful in borderline cases.

Often, the existing vegetation in the area can be a clue to what type of plants could be introduced, and how successful revegetation might be. Shadscale (mentioned above) and winterfat indicate dry areas not conducive to revegetation. Greasewood or saltgrass indicate salt-tolerant plants should be used. Vigorous stands of sagebrush, cheatgrass, or Russian thistle indicate a site that could produce high-yielding stands of forage plants. Remnants of bluebunch wheatgrass generally show that drought resistant species should grow well. Mountain shrubs in an area indicate a mix of less drought-resistant plants would succeed.

Several problems arise in trying to revegetate areas disturbed by access road and powerline construction. The most important thing is to get adequate cover established before erosion can get started. However, in areas where the exposed soil material resulting from construction activities is from the subsoil or substrata it is distinctly inferior to the natural soil of the area. This makes it difficult for soil stabilization plantings to take hold. On-site investigation and special preparation, in some cases, is needed. The following outlines some important site considerations (adapted from Artz, et al., 1970).

1. When slopes steeper than 3:1 are necessary, structural or mechanical stabilization or protection from runoff must be part of the design.

2. Cut and fill slopes should be covered with 6 or more inches of topsoil during construction. Scarification of slopes before placing topsoil is desirable.



3. Soil tests to determine needs for fertilizers or amendments are advisable.

4. Mulching will always improve chances for establishments. Straw mulch must be anchored in place. Hydraulically placed seed and mulch is especially adaptable around structures and other inaccessible and necessarily steep slopes.

5. Drill seeding is preferable to broadcasting. Seed should be applied prior to mulching.

6. Seedbed should be firm with adequate loose surface and mulch to cover the seed; scarify if hard or crusted.

A mixture of plant species is recommended in most cases. Some recommend a mix consisting of a rapid-growing annual species (pioneer plant) along with the slower-growing permanent species. (However, some BLM District experience has indicated that in mixtures of this nature, the annual proves too competitive for the slower-growing species. The success of this measure depends on the particular mix used.) A permanent species frequently is not a quick stabilizer because of failure to adapt to disturbed sites or because of a slow growth rate. For this reason, pioneer plants, such as some of the grasses, are depended on to do the initial job of stabilization along with a followup planting of more permanent species.

When a mixture of species is used, the chances of success are increased. There may be a variation in success and productivity of a single species because soil and moisture conditions can change markedly within short distances. When a mix is used, if one species does poorly, one or more of the others may take its place. One disadvantage of mixtures is that they are often hard to seed evenly.

Another factor in the use of plant materials is the ecotype. In a publication on Nevada highway plants, Stark (1966, p. 8-9) explains:

Each ecotypic variation of a species is especially adapted to a particular range of environmental conditions such as a particular soil or local climate. As long as the plant remains within its natural range, it is likely to grow well and reproduce. When an ecotype is removed from its natural range, the chances of survival are greatly reduced. Artemisia tridentata is widely distributed species with many possible ecotypes. It appears to play the roles of both pioneer and climax plant in many cases.

He recommends using plants that are weedy by nature:

Natural weeds, although often low in ornamental value, are usually adapted to a wide range of soils, temperature extremes, and moisture conditions. The wider the "ecological tolerance range" of a plant (or its ability to withstand environmental extremes), the better are its chances of success. In a hostile desert climate, ability to adapt successfully to a site should be more important than ability to beautify.

A good idea (Stark, 1966; Plummer, et al., 1968) is to collect all plant material from near the site where it is to be used, or from areas where soils, exposure and microclimate are similar.

The balance of this appendix will consist of a brief revegetation discussion by specific vegetative type. (Most of the information is derived from Hull and Doran, 1950; Plummer, et al., 1955; and Plummer, et al., 1968.)

#### Shadscale

Artificial revegetation is not recommended in this type. Although desirable for increasing forage, reducing erosion, and controlling noxious plants, artificial seeding attempts have generally failed. Even the native vegetation is sparse and natural revegetation is slow and spotty. Droughts, low humidity, high evaporation, and high diurnal temperature fluctuations add to the other problems such as poor soil conditions and scavenging of seeds by rodents.

#### Big Greasewood/Rabbitbrush

Studies (Rollins, et al., 1968; Evans, et al., 1969; Eckert, et al., 1973) indicate reseeding these areas is impractical, if not impossible, without a large supply of irrigation water and costly reclamation measures. Reasons include restricted rooting depth, high soil moisture tension, poor physical conditions, and a possible specific ion effect from sodium. (Conditions are similar to the shadscale zone.)

#### Cheatgrass

Cheatgrass has now gained control over large valley and foothill areas wherever perennial vegetation has been depleted. It maintains control for long periods of time because of a phenomenal ability to consume the surface soil moisture on which perennial seedlings depend. Cheatgrass now dominates former brushy types in the following approximate order of decreasing importance; big sagebrush, pinyon-juniper, mountain shrub, and shadscale (Plummer, et al., 1968).



Because it is a fire hazard and provides little forage value in dry years, the introduction of other species into these areas is desirable. These areas do provide good habitat for chukar and quail, however.

When to plant - Mid-October through February.

How to plant - Aerial broadcasting with a followup by anchor chain or harrow to cover the seed. Hand broadcasting can be used on small sites. (Broadcasting is not always a good method of seeding for several reasons, including a requirement to use twice as much seed as other methods, but often is the only practicable method for small and/or inaccessible areas.) Drilling can be successful on machine-scalped areas. A rangeland drill is a tractor-drawn apparatus specially designed for sowing seeds. Detailed descriptions of the apparatus used in revegetation work can be found in several publications. The Handbook of Range Seeding Equipment put out jointly by the Forest Service and BLM is one example (FSH 2244.01).

What to plant - Species and mixtures are essentially the same as should be planted in whatever type existed before the cheatgrass gained control. Check the appropriate brushy type for species and mixtures to plant.

### Big Sagebrush

This type occurs over a wide range of differing climates and soil conditions, necessitating the use of varied treatments.

When to plant - Winter is best, although mid-October through February can be successful.

How to plant - Aerial broadcasting followed by anchor chaining for large areas, hand broadcasting for small, isolated tracts. The rangeland drill can be used, and requires one third to one half the seed. There is some difference of opinion among professionals as to the relative efficiency of broadcasting versus drilling.

What to plant - Suggested species include crested wheatgrass, Russian wildrye, Indian ricegrass, four-wing saltbrush in lighter moisture areas. Where moisture is more available (i.e., 11 inches), intermediate wheatgrass, smooth brome, alfalfa, and antelope bitterbrush are suggested. Native shrubs such as sagebrush, rabbitbrush, and ephedra can also be used.

### Wet and Semi-Wet Meadows

These areas are important because they provide succulent vegeta-

tion throughout the growing season for wildlife and livestock. Most meadows have been seriously depleted of valuable sedges, grasses, forbs, and shrubs that were once abundant (Plummer, et al., 1968). The amount of organic matter present and available moisture in meadows tends to overcome the limitations found in other vegetative areas.

When to plant - Early spring to early summer is effective.

How to plant - Broadcasting is usually better than drilling on wet site.

What to plant - Two of the best varieties (Plummer, et al., 1968) are reed canarygrass and meadow foxtail. Black medick, redtop, and smooth brome are also suggested. Shrubs include bush cinquefoil, bearberry honeysuckle, and native willows. Silver buffalo-berry and Russian olive may be used in slightly alkaline areas. Shrubs must be transplanted rather than seeded.

#### Juniper and Pinyon-Woodland

There is a large variation in these sites, with a variety of climates. These areas are often without an adequate understory, resulting in erosion and siltation of streams. Seeding pinyon-juniper stands, although difficult, can improve the watershed qualities of the area. It is not easy to reseed these areas because the soils are usually low in organic matter and moisture-holding capacity. Where erosion has occurred, much of the topsoil is gone. Competition with tree roots for moisture and nutrients is an added factor.

When to plant - Late fall through winter.

How to plant - Helicopters are better than fixed-wing planes for seeding areas broken into patches. A pipe or log harrow is effective for covering seed on small areas. Seeds of any species in short supply can be dropped into cleat marks by seed dribblers mounted on crawler tractors.

What to plant - Because of the variety of conditions in these sites, the species to be planted frequently depends on what seeds are available. A number of shrubs, forbs, and grasses are recommended for use in erosion control or roadbank stabilization (Plummer, et al., 1968; Stark, 1966).

#### Mountain Shrub

Soils in the mountain shrub type are usually fertile and will support a high yield of seeded plants. This combined with moisture availability, makes the mountain shrub type generally successful



to seed.

When to plant - Late fall until snow, or right after snow melt in the spring. Fall is best because the seeds will then be covered naturally when leaves drop.

How to plant - Hand broadcasting is best for the small areas that are likely to be involved. Broken down brush from clearing operations makes an excellent seedbed.

What to plant - Great Basin wildrye, intermediate wheatgrass, tall oatgrass, arrowleaf balsamroot, alfalfa, rabbitbrush, antelope bitterbrush, currant, serviceberry, and mountain mahogany are some of the suggested species.

### Aspen

This type, especially where depleted of herbaceous groundcover, also supplies some of the best and easiest areas for revegetation.

When to plant - Before leaf fall and the first permanent snows.

How to plant - Hand or helicopter broadcasting is best for the small areas likely to be necessary.

What to plant - Since the intensity of shade will differ among aspen stands, shade-tolerant species should be used. Tall oatgrass, intermediate wheatgrass, Kentucky bluegrass, mountain lupine, common cowparsnip, antelope bitterbrush, snowberry, and rabbitbrush are among the species suggested.

Before a course of action is outlined for revegetation, the sites involved should be investigated closely. The discussion outlined above is quite general, so detailed sources of information, such as the references cited, should be consulted. Detailed lists of plant species, sources of seed, costs, methods of collection, quantities to use, and other information are found in these publications.

In summary, the following conditions and procedures should be observed for successful revegetation efforts (adapted from Plummer, et al., 1968).

1. Terrain and soil type must be suitable.
2. Precipitation must be adequate to assure establishment and survival of planted species.
3. Competition must be low enough to assure that the desired species can become firmly established.

4. Only species and strains of plants adapted to the area should be planted.

5. Mixtures of plant types rather than single species should be planted.

6. Sufficient seed of acceptable purity and viability should be planted to insure getting a stand.

7. Seed must be covered sufficiently.

8. Planting should be done in a season that gives promise of optimum conditions for establishment.

9. The planted areas must not be over-grazed.





## APPENDIX F

### WILDLIFE



## WILDLIFE SPECIES LIST

### Amphibians

#### Common Name

#### Scientific Name

Tiger Salamander  
Great Basin Spadefoot  
Western Toad  
Woodhouse's Toad  
Pacific Tree Frog  
Western Chorus Frog  
Leopard Frog  
Spotted Frog  
Bullfrog

Ambystoma tigrinum  
Scaphiopus hammondi  
Bufo boreas  
Bufo woodhousei  
Hyla regilla  
Pseudacris triseriata  
Rana pipiens  
Rana pretiosa  
Rana catesbeiana

### Reptiles

Collared Lizard  
Leopard Lizard  
Western Fence Lizard  
Sagebrush Lizard  
Side-blotched Lizard  
Desert Horned Lizard  
Short-horned Lizard  
Western Skink  
Western Whiptail  
Rubber Boa  
Racer  
Desert Striped Whipsnake  
Gopher Snake (Pine)  
Western Long-nosed Snake  
Western Garter Snake  
Common Garter Snake  
Western Ground Snake  
Desert Night Snake  
Western Rattlesnake

Crotaphytus collaris  
Crotaphytus wislizenii  
Sceloporus occidentalis  
Sceloporus graciosus  
Uta stansburiana  
Phrynosoma platyrhinos  
Phrynosoma douglassi  
Eumeces skiltonianus  
Cnemidophorus tigris  
Charina bottae  
Coluber constrictor  
Masticophis taeniatus  
Pituophis melanoleusus  
Rhinocheilus lecontei  
Thamnophis elegans  
Thamnophis sirtalis  
Sonora semiannulata  
Hypsiglena torquata  
Crotalus viridis

### Mammals

Merriam Shrew  
Masked Shrew  
Vagrant Shrew  
Dusky Shrew  
Northern Water Shrew  
Little Brown Myotis  
Yuma Myotis  
Long-eared Myotis  
Fringed Myotis  
Long-legged Myotis

Sorex merriami  
Sorex cinereus  
Sorex vagrans  
Sorex obscurus  
Sorex palustris  
Myotis lucifugus  
Myotis yumanensis  
Myotis evotis  
Myotis thysanodes  
Myotis volans

## Mammals

### Common Name

### Scientific Name

California Myotis	<u>Myotis californicus</u>
Small-footed Myotis (Least)	<u>Myotis subulatus</u>
Big Brown Bat	<u>Eptesicus fuscus</u>
Silver-haired Bat	<u>Lasionycteris noctivagans</u>
Western Pipistrella	<u>Pipistrellus hesperus</u>
Hoary Bat	<u>Lasiurus cinereus</u>
Western Big-eared Bat	<u>Corynorhinus rafinesquei</u>
Spotted Bat	<u>Euderma maculata</u>
Pallid Bat	<u>Antrozous pallidus</u>
Big Freetail Bat	<u>Tadarida macrotis</u>
Mexican Freetail Bat	<u>Tadarida brasiliensis</u>
Raccoon	<u>Procyon lotor</u>
Short-tail weasel	<u>Mustela erminea</u>
Long-tail weasel	<u>Mustela frenata</u>
Mink	<u>Mustela vison</u>
River Otter	<u>Lutra canadensis</u>
Spotted Skunk	<u>Spilogale putorius</u>
Striped Skunk	<u>Mephitis mephitis</u>
Badger	<u>Taxidea taxus</u>
Red Fox	<u>Vulpes fulva</u>
Kit Fox	<u>Vulpes macrotis</u>
Coyote	<u>Canis latrans</u>
Mountain Lion	<u>Felis concolor</u>
Bobcat	<u>Lynx rufus</u>
Yellowbelly Marmot	<u>Marmota flaviventris</u>
Townsend Ground Squirrel	<u>Citellus townsendi</u>
Richardson Ground Squirrel	<u>Citellus richardsoni</u>
Belding Ground Squirrel	<u>Citellus beldingi</u>
Whitetail Antelope Squirrel	<u>Citellus leucurus</u>
Golden-mantled Ground Squirrel	<u>Citellus lateralis</u>
Least Chipmunk	<u>Eutamias minimus</u>
Cliff Chipmunk	<u>Eutamias dorsalis</u>
Northern Pocket Gopher	<u>Thomomys talpoides</u>
Townsend Pocket Gopher	<u>Thomomys townsendi</u>
Little Pocket Mouse	<u>Perognathus longimembris</u>
Great Basin Pocket Mouse	<u>Perognathus parvus</u>
Dark Kangaroo Mouse	<u>Microdipodops megacephalus</u>
Ord Kangaroo Rat	<u>Dipodomys ordi</u>
Great Basin Kangaroo Rat	<u>Dipodomys microps</u>
Merriam Kangaroo Rat	<u>Dipodomys merriami</u>
Desert Kangaroo Rat	<u>Dipodomys deserti</u>
Beaver	<u>Castor canadensis</u>
Northern Grasshopper Mouse	<u>Onychomys leucogaster</u>
Western Harvest Mouse	<u>Reithrodontomys megalotis</u>
Canyon Mouse	<u>Peromyscus crinitus</u>
(Whitefooted) Deer Mouse	<u>Peromyscus maniculatus</u>



## Mammals

### Common Name

### Scientific Name

Pinyon Mouse  
Bushytail Woodrat  
Boreal Redback Vole  
Meadow Vole  
Mountain Vole  
Longtail Vole  
Sagebrush Vole  
Muskrat  
Norway Rat  
House Mouse  
Western Jumping Mouse  
Porcupine  
Whitetail Jackrabbit  
Snowshoe Hare  
Blacktail Jackrabbit  
Mountain Cottontail  
Pigmy Rabbit  
Mule Deer  
Pronghorn Antelope

Peromyscus truei  
Neotoma cinerea  
Cethrionomys gapperi  
Microtus pennsylvanicus  
Microtus montanus  
Microtus longicaudus  
Lagurus curtatus  
Ondatra zibethica  
Rattus norvegicus  
Mus musculus  
Zapus princeps  
Erethizon dorsatum  
Lepus townsendi  
Lepus americanus  
Lepus californicus  
Sylvilagus nuttalli  
Sylvilagus idahoensis  
Odocoileus hemionus  
Antilocarpa americana

## Birds

Common Loon  
Horned Grebe  
Eared Grebe  
Western Grebe  
Pied-Billed Grebe  
White Pelican  
Double-Crested Cormorant  
Great Blue Heron  
American Egret  
Snowy Egret  
Black Crowned Night Heron  
Least Bittern  
American Bittern  
White-Faced Glossy Ibis  
Whistling Swan  
Canada Goose  
White-fronted Goose  
Lesser Snow Goose  
Ross Goose  
Mallard  
Gadwall  
Baldpate (American widgeon)  
Pintail  
Greenwinged teal

Gavia immer  
Colymbus auritus  
Podiceps caspicus  
Aechmophorus occidentalis  
Podilymbus podiceps  
Pelecanus erythrorhynchos  
Phalacrocorax auritus  
Ardea herodias  
Casmerodius albus  
Egretta thula  
Nycticorax nycticorax  
Ixobrychus exilis  
Botaurus lentiginosus  
Plegadis chihi  
Olor columbianus  
Branta canadensis  
Anser albifrons  
Chen hyperborea  
Chen rossii  
Anas platyrhynchos  
Anas streperas  
Mareca americana  
Anas acuta  
Anas carolinensis

## Birds

### Common Name

### Scientific Name

Blue-winged teal	<u>Anas discors</u>
Cinnamon teal	<u>Anas cyanoptera</u>
Shoveler	<u>Spatula clypeata</u>
Wood Duck	<u>Aix sponsa</u>
Redhead	<u>Aythya americana</u>
Ring-necked Duck	<u>Aythya collaris</u>
Canvas-back	<u>Aythya valisineria</u>
Greater Scaup Duck	<u>Aythya marila</u>
Lesser Scaup Duck	<u>Aythya affinis</u>
American Goldeneye	<u>Bucephala clangula</u>
Barrow's Goldeneye	<u>Bucephala islandica</u>
Buffle-Head	<u>Bucephala albeola</u>
Ruddy Duck	<u>Oxyura jamaicensis</u>
Hooded Merganser	<u>Lophodytes cucullatus</u>
(Common) American Merganser	<u>Mergus merganser</u>
Red-Breasted Merganser	<u>Mergus serrator</u>
Turkey Vulture	<u>Cathartes aura</u>
Goshawk	<u>Astur atricapillus</u>
Sharp-Shinned Hawk	<u>Accipiter velox</u>
Cooper's Hawk	<u>Accipiter cooperii</u>
Red-Tailed Hawk	<u>Buteo borealis</u>
Swainson's Hawk	<u>Buteo swainsoni</u>
American Rough-Legged Hawk	<u>Buteo lagopus</u>
Ferruginous Hawk	<u>Buteo regalis</u>
Golden Eagle	<u>Aquila chrysaetos</u>
Bald Eagle	<u>Haliaeetus leucocephalus</u>
Marsh Hawk	<u>Circus hudsonius</u>
Osprey	<u>Pandion haliaetus</u>
Prairie Falcon	<u>Falco mexicanus</u>
Peregrine Falcon (Duck Hawk)	<u>Falco peregrinus</u>
Pigeon Hawk	<u>Falco columbarius</u>
Sparrow Hawk	<u>Falco sparverius</u>
Blue Grouse	<u>Dendragapus obscurus</u>
Ruffed Grouse	<u>Bonasa umbellus</u>
Sage Grouse	<u>Centrocercus urophasianus</u>
Hungarian Partridge (gray)	<u>Perdix perdix</u>
Chukar Partridge	<u>Alectoris graeca</u>
California Quail	<u>Lophortyx californicus</u>
Mountain Quail	<u>Oreortyx pictus</u>
Ring-necked Pheasant	<u>Phasianus colchicus</u>
Sandhill crane	<u>Grus canadensis</u>
Virginia Rail	<u>Rallus limicola</u>
Sora Rail	<u>Porzana carolina</u>
American Coot	<u>Fulica americana</u>
Killdeer	<u>Charadrius vociferus</u>
Black-bellied Plover	<u>Squatarola squatarola</u>



## Birds

<u>Common Name</u>	<u>Scientific Name</u>
Wilson Snipe (common)	<u>Capella delicata</u>
Long-billed Curlew	<u>Numenius americanus</u>
Spotted Sandpiper	<u>Actitis macularia</u>
(Western) Solitary Sandpiper	<u>Tringa solitaria</u>
Willet	<u>Catoptrophorus semipalmatus</u>
Greater Yellowlegs	<u>Totanus melanoleucus</u>
Lesser Yellowlegs	<u>Totanus flavipes</u>
Baird's Sandpiper	<u>Erolia bairdii</u>
Least Sandpiper	<u>Erolia minutilla</u>
Long-billed Dowitcher	<u>Limnodromus scolopaceus</u>
Western Sandpiper	<u>Ereunetes mauri</u>
Marbled Godwit	<u>Limosa fedoa</u>
American Avocet	<u>Recurvirostra americana</u>
Black-necked Stilt	<u>Himantopus mexicanus</u>
Wilson Phalarope	<u>Steganopus tricolor</u>
Northern Phalarope	<u>Lobipes lobatus</u>
California Gull	<u>Larus californicus</u>
Ring-billed Gull	<u>Larus delawarensis</u>
Franklin's Gull	<u>Larus pipixcan</u>
Bonaparte's Gull	<u>Larus philadelphia</u>
Forester's Tern	<u>Sterna forsteri</u>
Common Tern	<u>Sterna hirundo</u>
Caspian Tern	<u>Hydroprogne caspia</u>
Black Tern	<u>Chlidonias niger</u>
Band-tailed pigeon	<u>Columba fasciata</u>
Domestic Pigeon (Rock Dove)	<u>Columba livia</u>
White-winged dove	<u>Zenaida asiatica</u>
Mourning Dove	<u>Zenaidura macroura</u>
Barn Owl	<u>Tyto alba</u>
Screech Owl	<u>Otus asio</u>
Horned Owl	<u>Bubo virginianus</u>
Pygmy Owl	<u>Glaucidium gnoma</u>
Burrowing Owl	<u>Speotyto cunicularia</u>
Long-eared Owl	<u>Asio wilsonianus</u>
Short-eared Owl	<u>Asio flammeus</u>
Saw-whet Owl	<u>Cryptoglaux acadica</u>
Poor-will	<u>Phalaenoptilus nuttallii</u>
Common Nighthawk	<u>Chordeiles minor</u>
White-throated Swift	<u>Aeronautes saxatalis</u>
Broad-tailed Hummingbird	<u>Selasphorus platycercus</u>
Rufous Hummingbird	<u>Selasphorus rufus</u>
Calliope Hummingbird	<u>Stellula calliope</u>
Belted Kingfisher	<u>Megaceryle alcyon</u>
Yellow-Shafted Flicker	<u>Colaptes auratus</u>
Red-shafted Flicker	<u>Colaptes cafer</u>
Lewis's Woodpecker	<u>Asyndesmus lewis</u>

## Birds

<u>Common Name</u>	<u>Scientific Name</u>
Yellow-bellied sapsucker	<u>Sphyrapicus varius</u>
Williamson's Sapsucker	<u>Sphyrapicus thyroideus</u>
Hairy Woodpecker	<u>Dendrocopos villosus</u>
Downy Woodpecker	<u>Dendrocopos pubescens</u>
Eastern Kingbird	<u>Tyrannus tyrannus</u>
Western Kingbird	<u>Tyrannus verticalis</u>
Ash-throated Flycatcher	<u>Myiarchus cinerascens</u>
Say's Phoebe	<u>Sayornis saya</u>
Traill's Flycatcher	<u>Empidonax traillii</u>
Hammond's Flycatcher	<u>Empidonax hammondii</u>
Dusky Flycatcher	<u>Empidonax oberholseri</u>
Gray Flycatcher	<u>Empidonax wrightii</u>
Western Flycatcher	<u>Empidonax difficilis</u>
Western Wood Pewee	<u>Contopus richardsonii</u>
Olive-sided Flycatcher	<u>Nuttallornis borealis</u>
Horned Lark	<u>Otocoris alpestris</u>
Violet-green Swallow	<u>Tachycineta thalassina</u>
Tree Swallow	<u>Iridoprocne bicolor</u>
Bank Swallow	<u>Riparia riparia</u>
Rough-winged Swallow	<u>Stelgidopteryx ruficollis</u>
Barn Swallow	<u>Hirundo erythrogaster</u>
Cliff Swallow	<u>Petrochelidon pyrrhonota</u>
Purple Martin	<u>Progne subis</u>
Steller's Jay	<u>Cyanocitta stelleri</u>
Scrub Jay	<u>Aphelocoma coerulescens</u>
American Magpie	<u>Pica pica</u>
Raven	<u>Corvus corax</u>
Crow	<u>Corvus brachyrhynchos</u>
Pinyon Jay	<u>Gymnorhinus cyanocephalus</u>
Clark's Nutcracker	<u>Nucifraga columbiana</u>
Black-capped Chickadee	<u>Penthestes atricapillus</u>
Mountain Chickadee	<u>Penthestes gambeli</u>
Plain Titmouse	<u>Parus inornatus</u>
Common Bushtit	<u>Psaltiriparus minimus</u>
White-Breasted Nuthatch	<u>Sitta carolinensis</u>
Red-Breasted Nuthatch	<u>Sitta canadensis</u>
Brown Creeper	<u>Carthia familiaris</u>
Dipper (Water Ouzel)	<u>Cinclus mexicanus</u>
(Western) House Wren	<u>Troglodytes aedon</u>
Winter Wren	<u>Troglodytes troglodytes</u>
Long-billed Marsh Wren	<u>Telmatodytes palustris</u>
Canon Wren	<u>Catherpes mexicanus</u>
Rock Wren	<u>Salpinctes obsoletus</u>
Catbird	<u>Dumetella carolinensis</u>
Sage Thrasher	<u>Oreoscoptes montanus</u>
Mockingbird	<u>Mimus polyglottos</u>



## Birds

### Common Name

### Scientific Name

Robin	<u>Turdus migratorius</u>
Hermit Thrush	<u>Hylocichla guttata</u>
Swainson's Thrush	<u>Hylocichla ustulata</u>
Veery	<u>Hylocichla fuscescens</u>
Western Bluebird	<u>Sialia mexicana</u>
Mountain Bluebird	<u>Sialia currucoides</u>
Townsend's Solitaire	<u>Myadestes townsendi</u>
Golden-Crowned Kinglet	<u>Regulus satrapa</u>
Ruby-Crowned Kinglet	<u>Corthylio calendula</u>
American Pipit (Water)	<u>Anthus spinoletta</u>
Bohemian Waxwing	<u>Bombycilla garrula</u>
Cedar Waxwing	<u>Bombycilla cedrorum</u>
Northern Shrike	<u>Lanius borealis</u>
Loggerhead Shrike	<u>Lanius ludovicianus</u>
Starling	<u>Sturnus vulgaris</u>
Solitary Vireo	<u>Vireo solitarius</u>
Red-eyed Vireo	<u>Vireo olivaceus</u>
Warbling Vireo	<u>Vireo gilvus</u>
Orange-Crowned Warbler	<u>Vermivora celata</u>
Nashville Warbler	<u>Vermivora ruficapilla</u>
Virginia's Warbler	<u>Vermivora virginiae</u>
Yellow Warbler	<u>Dendroica aestiva</u>
Myrtle Warbler	<u>Dendroica coronata</u>
Audubon's Warbler	<u>Dendroica auduboni</u>
Black-throated Gray Warbler	<u>Dendroica nigrescens</u>
Townsend's Warbler	<u>Dendroica townsendi</u>
Hermit Warbler	<u>Dendroica occidentalis</u>
Chestnut-sided Warbler	<u>Dendroica pensylvanica</u>
Blackpoll Warbler	<u>Dendroica striata</u>
Northern Waterthrush	<u>Seiurus noveboracensis</u>
Mac Gillivray's Warbler	<u>Oporornis tolmiei</u>
Yellow-Throat	<u>Geothlypis trichas</u>
(Long-tailed) Yellow-breasted Chat	<u>Icteria virens</u>
(Wilson's) Pileolated Warbler	<u>Wilsonia pusilla</u>
American Redstart	<u>Setophaga ruticilla</u>
(English) House Sparrow	<u>Passer domesticus</u>
Bobolink	<u>Dolichonyx oryzivorus</u>
Western Meadowlark	<u>Sturnella neglecta</u>
Yellow-headed Blackbird	<u>Xanthocephalus xanthocephalus</u>
Red-winged Blackbird	<u>Agelaius phoeniceus</u>
Bullock's Oriole	<u>Icterus bullockii</u>
Brewer's Blackbird	<u>Euphagus cyanocephalus</u>
(Brown-head) Common Cowbird	<u>Molothrus ater</u>
Western Tanager	<u>Piranga ludoviciana</u>
Rose-breasted Grosbeak	<u>Pheucticus ludovicianus</u>

## Birds

### Common Name

Black-headed Grosbeak	<u>Hedymeles melanocephalus</u>
Indigo Bunting	<u>Passerina cyanea</u>
Lazuli Bunting	<u>Passerina amoena</u>
Evening Grosbeak	<u>Hesperiphona vespertina</u>
California Purple Finch	<u>Carpodacus purpureus</u>
Cassin's Purple Finch	<u>Carpodacus cassinii</u>
(Linnet) House Finch	<u>Carpodacus mexicanus</u>
Gray-Crowned Rosy Finch	<u>Leucosticte tephrocotis</u>
Black Rosy Finch	<u>Leucosticte atrata</u>
Common Redpoll	<u>Acanthis linaria</u>
Pine Siskin	<u>Spinus pinus</u>
(Common) American Goldfinch	<u>Spinus tristis</u>
Lesser Goldfinch	<u>Spinus psaltria</u>
Red Crossbill	<u>Loxia curvirostra</u>
Green-tailed Towhee	<u>Chlorura chlorura</u>
(Rufous-sided) Spotted Towhee	<u>Pipilo maculatus</u>
Lark Bunting	<u>Calamospiza melanocorys</u>
Savannah Sparrow	<u>Passerculus sandwichensis</u>
(Western) Grasshopper Sparrow	<u>Ammodramus savannarum</u>
Vesper Sparrow	<u>Poocetes gramineus</u>
(Western) Lark Sparrow	<u>Chondestes grammacus</u>
Sage Sparrow	<u>Amphispiza nevadensis</u>
Slate-colored Junco	<u>Junco hyemalis</u>
Oregon Junco	<u>Junco oreganus</u>
Gray-headed Junco	<u>Junco caniceps</u>
(Western) Tree Sparrow	<u>Spizella arborea</u>
(Western) Chipping Sparrow	<u>Spizella passerina</u>
Brewer's Sparrow	<u>Spizella breweri</u>
Harris Sparrow	<u>Zonotrichia querula</u>
White-Crowned Sparrow	<u>Zonotrichia leucophrys</u>
White-throated Sparrow	<u>Zonotrichia albicollis</u>
Fox Sparrow	<u>Passerella iliaca</u>
Lincoln's Sparrow	<u>Melospiza lincolnii</u>
Song Sparrow	<u>Melospiza melodia</u>
(Lapland) Alaska Longspur	<u>Calcarius lapponicus</u>
Snow Bunting	<u>Plectrophenax nivalis</u>



TABLE F-1  
EXISTING AQUATIC (STREAM) HABITAT

STREAM	AVERAGE FLOW (CFS) 1/	BIOLOGICAL RATING 2/	GAME FISH SPECIES 3/
<u>Humboldt River Basin</u>			
Humboldt River (Humboldt Co.)	38.13	171	B, BB, CC, LB, SB, WCR, BNB, GS, WBA, SP
Rock Creek	1.12	115	BT
Maggie Creek	5.88	173	BNT, BT, CT
Susie Creek	*	*	*
Humboldt River (Elko Co.)	12.61	201	B, BB, BNT, CC, LB, RT, SB, WC
Pie Creek	2.97	121	BNT, CT
Gance Creek	1.45	109	CT, RT
Mahala Creek	0.31	79	BT, CT
N. F. Humboldt River	2.33	134	BNT, BT, CT, RT
W. F. Beaver Creek	*	*	*
E. F. Beaver Creek	*	*	*
Mary's River	5.02	193	CT
T Creek	0.87	113	BT, CT
Wild Cat Creek	*	*	*
Tabor Creek	2.48	142	BT, RT
Burnt Creek	*	*	*
Sherman Creek	*	*	CT
Jackstone Creek	*	*	BT
Rabbit Creek	*	*	*
Lamoille Creek	11.90	196	BT, CT, RT
Cold Creek	3.14	153	BT
Soldier Creek	2.79	143	BT, CT
Stephens Creek	*	*	BT
Boulder Creek	9.74	220	BNT, BT
Derring Creek	2.00	95	BT, RT
Ackler Creek	12.92	225	BT
Trout Creek	*	*	*
Clover Creek	*	*	*
Willow Creek	*	*	*
Bishop Creek	*	*	*
<u>Great Salt Lake Basin</u>			
Loomis Creek	*	*	BT
Pole Creek	*	*	*
Thousand Springs Creek	*	54	BT
<u>Snake River Basin</u>			
Sun Creek	0.93	125	BT, RT
Camp Creek	2.25	91	RT
Cottonwood Creek	0.59	105	RT
Canyon Creek	3.30	133	BT, RT
N. F. Salmon Falls Creek	*	*	RT
Salmon Falls Creek	20.00	214	BNT, RT, W, KT
<u>Snake River Basin (Idaho)</u>			
Salmon Falls Creek	*	*	BNT, RT, CT, BT, KT, W, CS, LB, SB, BC, CC
Cottonwood Creek	*	*	RT
McMullan Creek	*	*	RT
Rock Creek	*	*	RT
Snake River	*	*	CT, RT

- 1/ Average Flow - Mean flow in CFS of the stream on date of survey on upper, middle sections of the stream.
- 2/ Biological Rating - Rating system developed by the Fisheries Division, Nevada Dept. of Fish & Game, which includes analysis of ten biological factors: velocity, temperature, volume flow, bottom type, turbidity, pools, cover, riffles, spawning and food.
- 3/ Game Fish Species:
- |                      |                            |                            |
|----------------------|----------------------------|----------------------------|
| B - Bluegill         | CT - Cutthroat Trout       | SB - Smallmouth Black Bass |
| BB - Black Bullhead  | CS - Coho Salmon           | SP - Sacramento Perch      |
| BNB - Brown Bullhead | GS - Green Sunfish         | W - Whitefish              |
| BT - Brook Trout     | KT - Kokanee Salmon        | WC - White Catfish         |
| BNT - Brown Trout    | LB - Largemouth Black Bass | WCR - White Crappie        |
| BC - Black Crappie   | RT - Rainbow Trout         | WBA - White Bass           |
| CC - Channel Catfish |                            |                            |

\* Data not available

## Fish Fauna of the Humboldt System

### Trout (Family Salmonidae)

- Cutthroat trout - Salmo clarki (N)
- Rainbow trout - Salmo gairdneri (I)
- Brown trout - Salmo trutta (I)
- Brook trout - Salvelinus fontinalis (I)
- Mountain whitefish - Prosopium williamsoni (N)

### Suckers (Family Catostomidae)

- Mountain sucker - Catostomus platyrhynchus (N)
- Tahoe sucker - Catostomus tahoensis (N)

### Catfish (Family Ictaluridae)

- White catfish - Ictalurus catus (I)
- Black bullhead - Ictalurus melas (I)
- Brown bullhead - Ictalurus nebulosus (I)
- Channel catfish - Ictalurus punctatus (I)

### Basses (Family Serranidae)

- White bass - Roccus chrysops (I)

### Sunfishes (Family Centrarchidae)

- Sacramento Perch - Archoplites interruptus (I)
- Green sunfish - Lepomis cyanellus (I)
- Bluegill - Lepomis macrochirus (I)
- Largemouth bass - Micropterus salmoides (I)
- Smallmouth bass - Micropterus dolomieu (I)
- White crappie - Pomoxis annularis (I)

### Perches (Family Percidae)

- Walleye - Stizostedion vitreum (I)

### Minnow and Carp (Family Cyprinidae)

- Goldfish - Carassius auratus (I)
- Carp - Cyprinus carpio (I)
- Lahontan tui chub - Gila bicolor obesus (N)
- Lahontan speckled dace - Richichthys osculus robustus (N)
- Lahontan redbreast - Richardsonius egregius (N)

### Livebearers (Family Poeciliidae)

- Mosquitofish - Gambusia affinis (I)



Northern squawfish - Ptychocheilus oregonensis (N)  
Longnose dace - Rhinichthys cataractae (N)  
Speckled dace - Rhinichthys osculus (N)  
Redside shiner - Richardsonius balteatus (N)

Sculpins (Family Cottidae)

Mottled sculpin - Cottus bairdi (N)  
Piute sculpin - Cottus beldingi (N)  
Shorthead sculpin - Cottus confusus (N)

Fish Fauna of the Snake System (Nevada & Idaho)

Sturgeon (Family Acipenseridae)

White sturgeon - Acipenser transmontanus - Snake River  
below Shoshone Falls (N)

Trout (Family Salmonidae)

Coho salmon - Oncorhynchus kisutch (I)  
Kokanee salmon - Oncorhynchus nerka (I)  
Mountain whitefish - Prosopium williamsoni (N)  
Cutthroat trout - Salmo clarki (N)  
Rainbow trout - Salmo gairdneri (N)  
Brown trout - Salmo trutta (I)  
Brook trout - Salvelinus (I)

Suckers (Family Catostomidae)

Utah sucker - Catostomus ardens (N)  
Longnose sucker - Catostomus catostomus (N)  
Bridgelip sucker - Catostomus columbianus (N)  
Largescale sucker - Catostomus macrocheilus (N)  
Mountain sucker - Catostomus platyrhynchus (N)

Catfish (Family Ictaluriadae)

Brown bullhead - Ictalurus nebulosus (I)  
Channel catfish - Ictalurus punctatus (I)

Sunfishes (Family Centrarchidae)

Pumpkinseed - Lepomis gibbosus (I)  
Bluegill - Lepomis macrochirus (I)  
Smallmouth bass - Micropterus dolomieu (I)  
Largemouth bass - Micropterus salmoides (I)  
Black crappie - Pomoxis nigromaculatus (I)

Perches (Family Percidae)

Yellow perch - Perca flavescens (I)

Walleye - Stizostedion vitreum (I)

Minnow and Carp (Family Cyprinidae)

Chiselmouth - Acrocheilus alutaceus (N)

Carp - Cyprinus carpio (I)

Utah chub - Gila atraria (N)

Peamouth - Mylocheilus caurinus (N)

Sculpins (Family Cottidae)

Piute sculpin - Cottus beldingi (N)

(N) = Native

(I) = Introduced



AN EVALUATION OF THE EFFECTS OF THE CONSTRUCTION AND OPERATION  
OF THE SIERRA PACIFIC POWER COMPANY'S TRANSMISSION LINE  
FROM  
OREANA, NEVADA TO HUNT, IDAHO  
UPON THE LAHONTAN CUTTHROAT TROUT POPULATION  
OF MARYS RIVER IN ELKO COUNTY, NEVADA

AN EVALUATION OF THE EFFECTS OF THE CONSTRUCTION AND OPERATION  
OF THE SIERRA PACIFIC POWER COMPANY'S TRANSMISSION LINE FROM  
OREANA, NEVADA TO HUNT, IDAHO UPON THE LAHONTAN CUTTHROAT TROUT  
POPULATION OF MARYS RIVER IN ELKO COUNTY, NEVADA.

by Thomas J. Trelease, Fisheries Consultant

Concern has been expressed for the safety of the Lahontan Cutthroat trout in Marys river in connection with the "Marys River Crossing" of the Sierra Pacific Power Company's power transmission line from Oreana, Nevada to Hunt, Idaho.

Marys river, located in northern Elko county, Nevada, is one of the habitats of the native Lahontan cutthroat trout. This species is classified by the U. S. Fish and Wildlife Service as a "Threatened" species. According to Mr. Bob Behnke, fish taxonomist from Colorado State University, Colorado, the Marys river cutthroat trout are pure specimens of the Humboldt variety of the Lahontan cutthroat trout (Salmo clarki humboldtensis) (See attached copy of letter from Mr. Behnke to Mr. Pat Coffin, fishery biologist for the Nevada Department of Fish and Game).

According to data obtained from the Elko office of the Nevada Department of Fish and Game, Marys river supports a fishery of fair quality with the prime game fish species being the cutthroat trout.

The transmission line will cross Marys river approximately 1000' upstream from an iron bridge, locally called the orange bridge. In this particular area, the stream is in relatively good condition but with some bank cutting and siltation evident. It is obvious that a fire or fires occurred in the area in the not too distant past as is evidenced by an invasion of Giant Wild Rye in the burned areas (See photo no. 1).

Contacts with Nevada Department of Fish and Game personnel indicate that agency has two primary concerns with the transmission line construction. One is that they are concerned over the possibility of erosion and siltation increases. Two is that they are most concerned with new access that may be made into presently primitive areas along the transmission line and do not want the roads left in a condition that they will be later used by the public.

The present plans for the crossing that have been conveyed to the writer indicate that the Sierra Pacific Power Company also has concern for preventing an increase in siltation and erosion and are endeavoring to minimize these effects as much as is possible and practical. The transmission line is designed to be maintenance free for a 50 year period, therefore periodic road use will not be needed except for rare circumstances. Also the towers will be of aluminum and grounded for lightning protection. Their design is depicted herein and indicates a technique that will not alter the underlying soil too substantially or permanently either during construction or afterward. The precast concrete foundations for the towers are shaped somewhat like an inverted mushroom (See sketch). After installation only about 6 inches to 8 inches of the foundation will protrude above the ground level and this will be 12 inches in diameter. The 4 guy wires will be anchored to plates or 23 inch diameter cones that will be buried 10 feet underground. Only a threaded copper rod about 1 inch in diameter will protrude to which the guy wires will be attached by a tension device. (See Photo no. 10).

The tower sites having the most potential for affecting the trout population of Marys river are Nos. 474, 475, 476, 477, and 478. (See map for Sierra Pacific Power Company tower numbers). All of these are of the "Guyed Delta" design. (See fig. 1). Tower no. 476 is the closest to Marys river and lies approximately 400 feet west of the river. This tower will be in a relatively flat area (See photo 2). No new spur road will be needed to erect this tower as a useable road presently exists at that site. Because the land is flat, there should be little or no movement of disturbed soil, even with fairly heavy rains.

Across the river to the east, lies tower site no. 477. Although this tower site is on a slope, it is about 1200 feet from the river and the likelihood of silt reaching the river in significant quantities is remote. No road would be constructed. Overland travel would allow access for construction. This shouldn't leave significant amounts of exposed soil and tracks should revegetate rather readily. However, this overland access should be blocked or obliterated to prevent future offroad vehicular use.

The transmission lines will be suspended across the river by the afore-mentioned two towers. It will not be necessary to ford the river with equipment as the orange bridge is only about 1000 feet downstream from the crossing.

The next tower site to the east (no. 478) lies on the east side of a ridge. A short spur road will be needed from the existing road to this site and about 200 feet of roadwork will be needed which will disturb about 0.05 acres of soil. Any silt contributed from this site would not have a direct route to the river but would first have to move eastward away from the river and into a ravine where it would then have to move southward and westward a total distance of about  $\frac{1}{2}$  mile with about 800 feet of that being over relatively flat ground before reaching the river.

Tower sites nos. 479, 480, and 481 are close beside the existing road and only a very short distance of overland travel is needed to reach them. No problems of silt transport to the river are anticipated at any of these sites.

Tower sites nos. 482, 483, 484, and 485 are all accessible by overland travel and their distances from Marys river are from one mile (tower site no. 482) to more than 1.6 miles (tower site no. 485). From this point, the transmission line enters Meadow Creek drainage.

Going west from Marys river, tower no. 475 will require about 500 feet of roadwork and will disturb about 0.11 acres of soil. However, over 1500 feet of relatively flat land separates this site from the river and the likelihood of silt reaching the river is slight. Nevertheless, as a safeguard for periods of excess runoff, the disturbed soil from the roadwork should be treated to prevent silt movement from the area and to encourage regrowth of vegetation as soon as possible. These same protective measures should also be applied to the 0.30 acres of disturbed soil on the 1300 feet of roadwork that will be needed for tower site no. 474. Both of these sites are on steep slopes and warrant such precautionary treatment. With the latter tower site being about  $\frac{1}{2}$  mile from the river, only extreme runoff could carry any silt from it into the river. Revegetation should minimize or prevent such movement of silt.



From tower site no. 474 westward the remaining sites within the immediate drainage are all close to the existing road and are accessible by short reaches of overland travel. No siltation problems are anticipated with these sites because of their distance from Marys river.

Having been somewhat familiar with the Marys river area and the cutthroat trout population therein for close to 30 years as former Chief of Fisheries for the Nevada Department of Fish and Game, the writer is aware that erosion and siltation within the Marys river drainage is getting more and more severe. This is primarily due to overgrazing, brush fires and heavy runoff that are adversely affecting the watershed. Therefore, it is highly desirable that any work that is conducted in the Marys river crossing area be done in such a fashion as to prevent future erosion and resultant siltation problems.

After inspecting the Marys river crossing and the associated tower and road construction sites by land and by helicopter, and after reviewing the plans of the Sierra Pacific Power Company for the construction of the transmission line at the Marys river crossing, the writer is convinced that little or no environmental damage will occur to the Marys river cutthroat trout population if the plans as reviewed by and explained to the writer and described herein are adhered to and the recommendations contained herein are followed.

#### Recommendations:

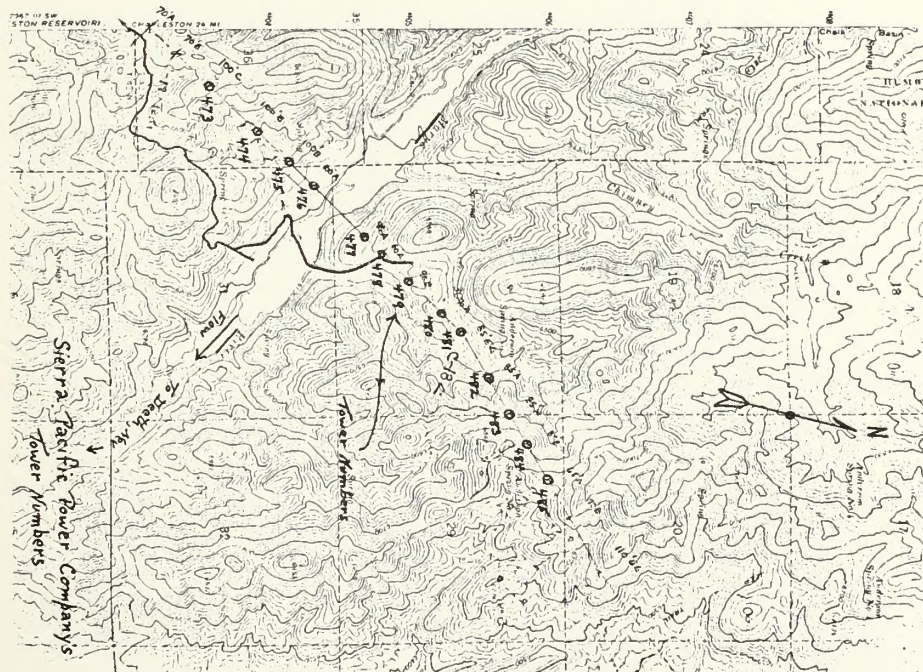
1. During construction, the top foot of soil at each excavation should be removed and placed in a pile separate from the underlying soil that is removed. Upon refilling the excavation, the topsoil should be used last so that the covered excavation will have approximately one foot of unpacked topsoil at the top of the excavation. All the excavations should then be dressed to blend in with the surrounding terrain. This will encourage revegetation of the excavated area. The subsoil that is removed from the excavation should not be used as a top dressing on the completed project as revegetation will be greatly retarded.
2. Upon completion of the installation of the transmission lines to the towers, the roads and cuts should be dressed with topsoil and revegetated to enhance restoration and minimize erosion.
3. All roads shall be blocked off and/or obliterated to reduce or prevent future off road vehicular use by the public.

(4)

4. In some areas, particularly those associated with tower sites nos. 474, 475, and 476, where roadwork must be done, it may be desirable on the steeper slopes to do rockwork or put in dikes to prevent rapid runoff of water with its resultant erosion. It is recommended that after the work is completed at these sites and before the equipment is removed that the Elko office of the Nevada Department of Fish and Game be notified so that should they desire, they could inspect the sites to see if they feel that such rockwork or diking is necessary to prevent siltation problems.

Submitted December 6, 1976

*Thomas J. Foreman*  
Fisheries Consultant







## APPENDIX G

### RECREATION

The Following Table Lists Impacts To The  
Recreation Resource By Corridor And  
Segment.



**TABLE G-1**  
**RECREATIONAL IMPACTS BY CORRIDOR**

HIGHWAY CORRIDOR						
<u>Type of Impact</u>	<u>Segment</u>	<u>Resource</u>	<u>Type</u>	<u>Location</u>		
physical impact	Segment A-B	structure	proposed road side rest	1-80, west of Rye Patch Dam		
physical impact		structure	proposed state recreation area	1-80, west of Rye Patch Dam		
impacts on recreation experience		recreation concentrations	non-water related/sightseeing	north end of Humboldt Range		
physical impact		structure	private recreation area	north end of Humboldt Range		
Physical impact	Segment B-C	Structure	road side rest	Cosgrave - 17 miles s.w. of Winnemucca		
Impacts on recreation experience		recreation concentrations	water related/sightseeing	Winnemucca		
impact on recreation experience		recreation concentrations	non-water related/sightseeing	Sonoma Mt. east of Winnemucca		
activity impacts		stream	fishing	Rock Creek - on line 15 miles east of Winnemucca		
impacts to recreation experience	Segment C-D	recreation concentrations	water related/sightseeing	adjacent to 1-80 and river		
impacts to recreation experience	Segment D-E	recreation concentrations	water related/sightseeing	adjacent to 1-80 and river		
impacts to recreation experience	Segment E-F	recreation concentrations	non-water related	Emigrant Pass west of Carlin		
impact to recreation experience	Segment F-G	recreation concentrations	water & non-water related/sightseeing	on 1-80 & river west of Elko		
activity impacts		stream	fishing	where line crosses stream flow from Ruby Mts. to Humboldt River		

**TABLE G-1**  
**RECREATIONAL IMPACTS BY CORRIDOR**  
**(CONT.)**

HIGHWAY CORRIDOR						
<u>Type of Impact</u>	<u>Segment</u>	<u>Resource</u>	<u>Types</u>	<u>Location</u>		
impacts to recreation experience	Segment G-J	recreation opportunity	sightseeing	on line north of Wells, Nevada		
impacts to recreation experience	Segment J-K	recreation concentrations	non-water related/sightseeing/primitive values	at Contact, Nevada on Hwy 93, 15 miles south of Jackpot, Nevada		
physical impact		structures	proposed state recreation area	at Contact, Nevada		
impacts to recreation experience		recreation opportunity	sightseeing	on line along Highway 93		
physical impact		structures	proposed state recreation area	Jackpot, Nevada		
impacts to recreation experience	Segment K-L	recreation concentrations	water related/primitive values/sightseeing	in Idaho on line 5 miles north of Jackpot, Nevada		
impacts to recreation experience		recreation concentrations	water related/sightseeing	Salmon Falls Reservoir, Idaho		
physical impact	Segment L-M	structures/development	private recreation area	18 miles south of Twin Falls, Idaho		
impacts to recreation experience	Segment M-N	recreation opportunity	non-water related	foothills, Sugarloaf Mt., 18 miles s.		
activity impacts		historical trail	Oregon trail	south of Snake River, Idaho		
impacts to recreation experience		recreation concentrations	water related/sightseeing	Snake River, Idaho		



TABLE G-1  
RECREATIONAL IMPACTS BY CORRIDOR  
(CONT.)

O'NEIL BASIN CORRIDOR				
Type of Impact	Resource	Type	Location	
Segment A-C				
impacts to recreation experience	recreation concentrations	non-water related/sightseeing	Humboldt Range, Sacramento Canyon	
impacts to recreation experience	recreation concentrations	non-water related/sightseeing	East Range, Table Mountain	
impacts to recreation experience	recreation concentrations	water related/sightseeing	as line crosses Humboldt River	
Segment C-K				
impacts to recreation experience	recreation concentrations	non-water related/sightseeing	on line 15 miles from Humboldt River	
physical impacts	development	proposed reservoir	Rock Creek Reservoir	
impacts to recreation experience	recreation concentrations	non-water related/sightseeing	E side of proposed Rock Creek Reservoir	
impacts to recreation experience	recreation concentrations	non-water related/water related	S of tip of Humboldt National Forest west of North Fork of the Humboldt	
impacts to recreation experience	recreation opportunity	water related	as line crosses North Fork of the Humboldt	
impacts to recreation experience	recreation opportunity	sightseeing	on line NW of North Fork of the Humboldt	
impacts to recreation experience	recreation concentrations	water related/non-water related sightseeing/primitive values	throughout upstream tributaries of Mary's River and Salmon Falls Creek	
activity impacts	streams	fishing	upstream tributaries of Mary's River	
physical impacts	development	proposed state recreation area	Mary's River camp	
physical impacts	development	proposed state recreation area	Deer Creek Camp, tributary of Salmon Falls Creek	
impacts to recreation resource	recreation concentrations	water related/non-water related sightseeing/primitive values	O'Neil Basin/Browns Bench	
Segment K-M				
impact to recreation resource	recreation concentrations	non-water related/sightseeing	along foothills east of Highway 93	

TABLE G-1  
RECREATIONAL IMPACTS BY CORRIDOR  
(CONT.)

ADOBE RANGE CORRIDOR					
<u>Type of Impacts</u>	<u>Resource</u>	<u>Type</u>	<u>Location</u>		
	(see Recreation - Impacts O'Neil Basin Corridor)				
Segment A-C					
Segment C-D	(see Recreation - Impacts Highway Corridor)				
Segment D-H					
impacts to recreation experience	recreation opportunities	non-water related	Tuscarora Mountain 10 miles nw of Car'		
impacts to recreation experience	recreation opportunities	winter sports	where line crosses Highway 51		
impacts to recreation experience	recreation concentrations	non-water related/water related sightseeing	approximately 18 miles due n. of Elko		
activity impacts	stream	fishing	approximately 18 miles due n. of Elko		
Segment H-I					
impacts to recreation experience	recreation concentrations	non-water related/sightseeing	w. of North Fork of the Humboldt River		
Segment I-J					
physical impacts	development	proposed Devils Gate Reservoir	n. of where line crosses North Fork of the Humboldt River		
impacts to recreation experience	recreation concentrations	non-water related/water related	where line crosses North Fork of the Humboldt River		
activity impacts	river	fishing	where line crosses North Fork of the Humboldt River		
Impact to recreation experience	recreation opportunity	sightseeing	west of Mary's River		
physical impact	development	proposed Vista Reservoir	where line crosses Mary's River		
impacts to recreation experience	recreation concentrations	non-water related/water related	where line crosses Mary's River		
activity impacts	river	fishing	where line crosses Mary's River		
impacts to recreation experience	recreation concentrations	non-water related/sightseeing	Snake Range, west of Highway 93		



TABLE G-1  
RECREATIONAL IMPACTS BY CORRIDOR  
(CONT.)

METROPLIS CORRIDOR			
<u>Type of Impacts</u>	<u>Resource</u>	<u>Type</u>	<u>Location</u>
	Segment A-C (see Recreation - Impacts, O'Neil Basin Corridor)		
	Segments C-D-E-F (see Highway Corridor)		
	Segment F-I		
impacts to recreation experience	recreation opportunity	non-water related	north of Elko 8 miles
impacts to recreation experience	recreation opportunity	non-water related/water related sightseeing	north of Elko 10 miles
activity impacts	stream	fishing	north of Elko 10 miles
impacts to recreation experience	recreation concentrations	non-water/sightseeing	on line west of North Fork of the Humboldt River
	Segment I-J (see Recreation - Impacts, Adobe Range Corridor)		
	Segment J-K-L-M-N (see Recreation Impacts, Highway Corridor)		

# APPENDIX H SOCIAL-ECONOMICS



Table H-1  
CIVILIAN LABOR FORCE

	Census of Population (Residence Based)			Department of Employment (by Place of Work)		
	1960	1970	% Change	1968	1973	% Change
<u>Jerome County</u>						
Civilian Labor Force	4,064	4,086	.5	3,821	4,539	18.8
Unemployment	176	211	19.9	223	222	-0.4
% Unemployed	4.3	5.2		5.8	4.9	
Total Employment	3,888	3,875	-.3	3,598	4,317	20
Agricultural	1,612	1,179	26.9	1,676	1,472	-12.2
Total Manufacturing	248	432	74.2	179	709	296.1
Food Processing	168	352	109.5	155	165	6.5
Lumber	11	4	-63.6			
Other	69	76	10.1	24	514	2,166.7
Total Non-Manufacturing	1,958	2,264	15.6	1,430	1,741	21.7
Construction	244	222	-9	72	108	50
Transportation, Communi- tion and Utilities	262	258	-1.5	67	116	73.1
Trade	642	770	19.9	527	693	31.5
Finance, Insurance, and Real Estate	52	65	25	47	70	48.9
Service and Misc.	470	635	35.1	285	321	12.6
Government	288	314	9	432	433	.2
Not Reported	70					
Non-Agriculture Self-Employed and Domestic				313	395	26.2
Total Employment	3,888	3,875	-.3	3,598	4,317	20
<u>Twin Falls County</u>						
Civilian Labor Force	16,046	16,774	4.5	18,570	19,762	6.4
Unemployment	604	593	-1.8	770	768	-0.3
% Unemployed	3.7	3.5		4.2	3.9	
Total Employment	15,442	16,181	4.8	17,800	18,994	6.7
Agricultural	3,685	2,710	-26.46	2,900	2,751	-5.1
Total Manufacturing	1,382	1,911	38.3	1,830	2,571	40.5
Food Processing	757	978	29.19	1,390	1,466	5.5
Lumber	40	42	5			
Other	585	891	52.3	440	975	121.6
Total Non-Manufacturing	10,072	11,560	14.8	9,800	11,972	22.2
Construction	983	842	-14.3	700	961	37.3
Transportation, Communi- tion and Utilities	1,267	1,203	-5.1	990	1,239	25.2
Trade	3,688	4,422	19.9	3,870	4,654	20.3
Finance, Insurance, and Real Estate	550	734	33.45	530	620	17
Service and Misc.	2,619	2,931	11.9	1,890	1,885	-0.3
Government	965	1,428	47.9	1,820	2,613	43.6
Not Reported	303					
Non-Agriculture Self-Employed and Domestic				3,270	1,700	-48
Total Employment	15,442	16,181	4.8	17,800	18,994	6.7

Sources: Census of Population, 1960, Table 83, Labor Force  
1960, Table 85, Industry of Employed Persons  
1970, Table 121, Labor Force  
1970, Table 123, Industry of Employed Persons  
Basic Economic Data for Idaho, Department of Employment, State of Idaho,  
March 1970.  
1973 Date from unpublished Department of Employment Information.

TABLE H-2  
POPULATION AND RATE OF CHANGE  
NEVADA-IDAHO BY COUNTY  
1960-70-75

County	1960 <u>1</u> / Pop.	1970 <u>1</u> / Pop.	Rate of Change 1960-70 %	1975 <u>3</u> / Pop.	Rate of Change 1970-5 %
<u>URBAN</u>					
Washoe	84,743	121,068	43	159,000	31
Carson City	8,063	15,468 <sup>2/</sup>	92	26,600	72
Douglas	3,481	6,882	98	10,700	55
Storey	568	695	22	1,100	58
TOTAL	96,855	144,113	49	197,400	37
<u>RURAL</u>					
Humboldt	5,708	6,375	12 <u>5</u> / <sub>5</sub>	7,600	19
Pershing	3,199	2,670	-17 <u>5</u> / <sub>5</sub>	2,900	09
Churchill	8,452	10,513	25	11,600	10
Lyon	6,143	8,221	34	8,900	08
Mineral	6,329	7,051	11 <u>5</u> / <sub>5</sub>	7,550	07
Nye	4,374	5,599	28	4,500	-20
Lander	1,566	2,666	70	2,900	09
Eureka	767	948	24	1,000	05
Esmeralda	619	629	02 <u>5</u> / <sub>5</sub>	500	-21
TOTAL	37,157	44,672	20	47,450	06
Elko	12,011	13,958	16	18,800	35
Nevada	285,278	488,778	71	606,850	24
Twin Falls <u>4</u> / <sub>4</sub>	41,842	41,807	-.01	45,900	10
Jerome <u>4</u> / <sub>4</sub>	11,712	10,253	-12	13,500	32
TOTAL	53,554	52,060	-.03	59,400	14
Idaho <u>4</u> / <sub>4</sub>	667,191	713,008	.07	799,000	12

- 1/ 1970 Census of Population, Number of Inhabitants, Nevada, April 1971, U.S. Dept. of Commerce, Bureau of Census, Population Division.
- 2/ Between 1960-70, the name of Ormsby County, which was separated into both rural and urban areas, was changed to Carson City County. Since then, no distinction can be made between the rural and urban populations.
- 3/ Building Bridges to Work, Nevada Employment Security Dept., March 1975, Manpower Information and Research Section.
- 4/ U.S. Dept. of the Interior, Bureau of Land Management, Environmental Analysis for the Agricultural Development Program, Lower Snake River Plains of Idaho, January 1976.
- 5/ Due to the nature of components of change, Humboldt, Pershing, Mineral, and Esmeralda Counties experienced net out-migration in the decade 1960-1970, (-0.1, -24.0, -1.6, and -5.5 percent respectively).'



TABLE H-3  
INCREASE IN TOTAL ASSESSED VALUATION \$MILLIONS

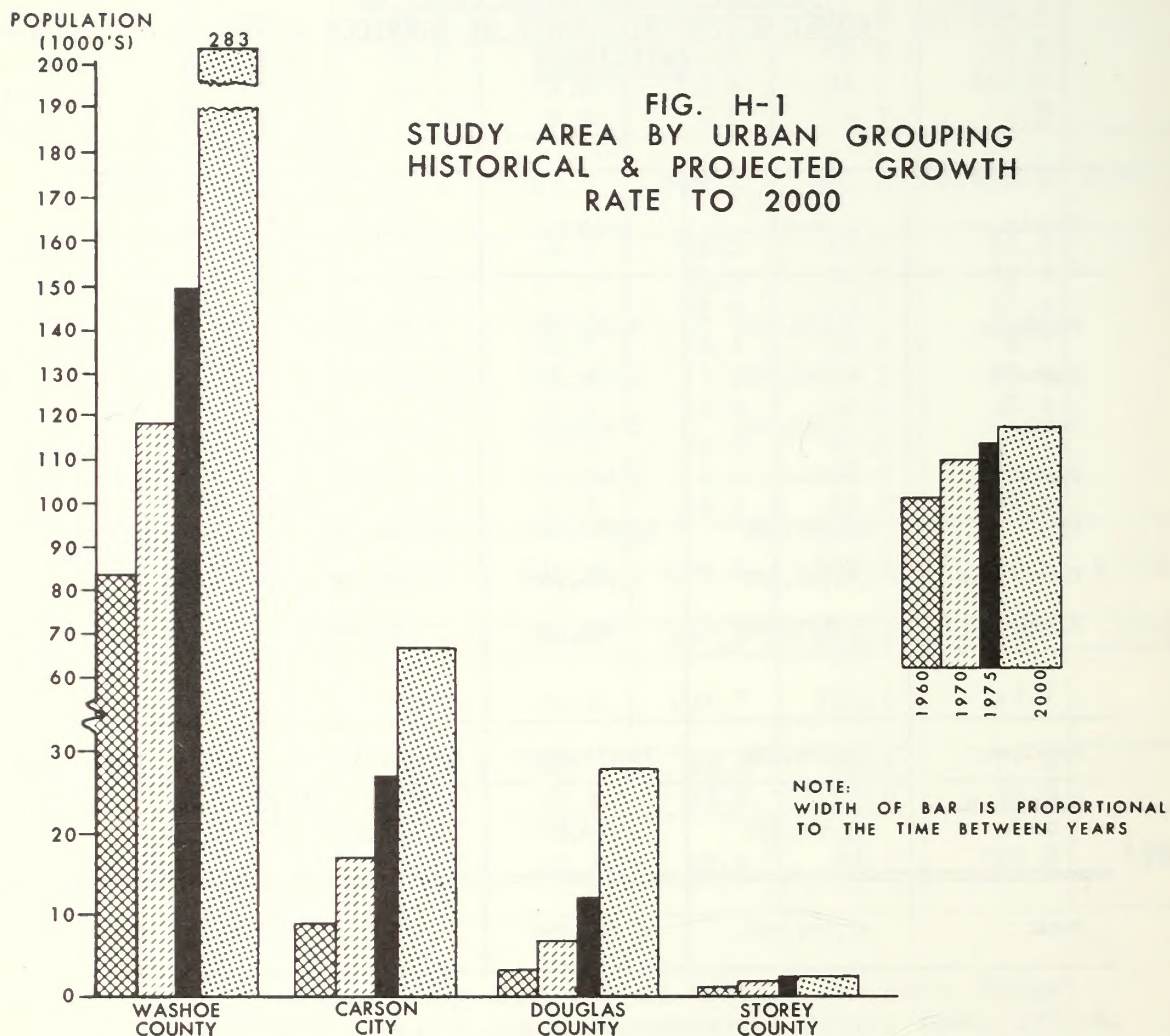
County	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	Total
Washoe	482.2	543.1	595.2	687.9	778.2	878.7	
Carson	29.0	34.0	39.3	42.9	48.3	52.4	
Douglas	65.4	69.7	74.6	82.6	96.1	111.4	
Storey	4.8	5.5	5.8	5.8	6.5	7.8	
TOTAL	581.4	652.3	714.9	819.2	929.1	1,050.3	4,747.2
Humboldt	33.6	35.4	34.5	39.2	44.3	51.0	
Pershing	21.3	22.8	23.4	25.3	27.5	29.8	
Churchill	29.0	32.5	34.7	38.5	42.7	47.4	
Lyon	52.1	60.4	63.8	62.1	65.9	75.7	
Mineral	11.2	14.3	15.3	17.1	19.2	21.0	
Nye	24.7	27.9	31.8	45.0	48.6	58.4	
Lander	20.2	21.0	21.0	21.9	23.5	26.1	
Esmeralda	5.9	7.0	7.4	9.1	10.4	11.3	
Eureka	16.5	16.2	16.5	18.1	21.4	28.1	
TOTAL	214.5	237.5	248.4	276.3	303.5	348.8	1,629.0
Elko	80.4	84.4	90.8	107.7	123.1	143.7	630.1
TOTAL	80.4	84.4	90.8	107.7	123.1	143.7	
Twin Falls	56.7	58.1	60.7	63.2	66.9	71.0	
Jerome	19.7	20.4	21.6	23.9	27.6	30.9	
TOTAL	76.4	78.5	82.3	87.1	94.5	101.9	520.7

Source: Local Government Red Book and Ad Valorem Tax Rates Budget Summaries for Nevada Local Governments, Fiscal Years 1971-6. Idaho data obtained through personal contact with local Tax Commissions in Twin Falls and Jerome Counties.

**TABLE H-4**  
**SUMMARY OF ESTIMATED COSTS OF**  
**CONSTRUCTION BY COUNTY BY CORRIDOR**  
**(MILLIONS)**

County	O'Neil Basin	Highway	Adobe Range	Metropolis
Pershing	5,283,900	4,262,900	5,283,900	5,283,900
Humboldt	2,448,900	6,124,300	2,539,600	2,539,600
Lander	1,785,000	2,358,200	2,448,900	2,358,200
Eureka	-----	2,446,250	2,446,250	2,446,250
Elko	13,180,300	12,640,400	11,196,700	11,700,300
Twin Falls	4,897,800	4,988,500	4,988,500	4,988,500
Jerome	453,500	453,500	453,500	453,500
Sub-Total	28,049,400	33,274,050	29,357,350	29,770,250
Substation Costs	3,500,000	3,500,000	3,500,000	3,500,000
Total	31,549,400	36,774,050	32,857,350	33,270,250





**SOURCE:**

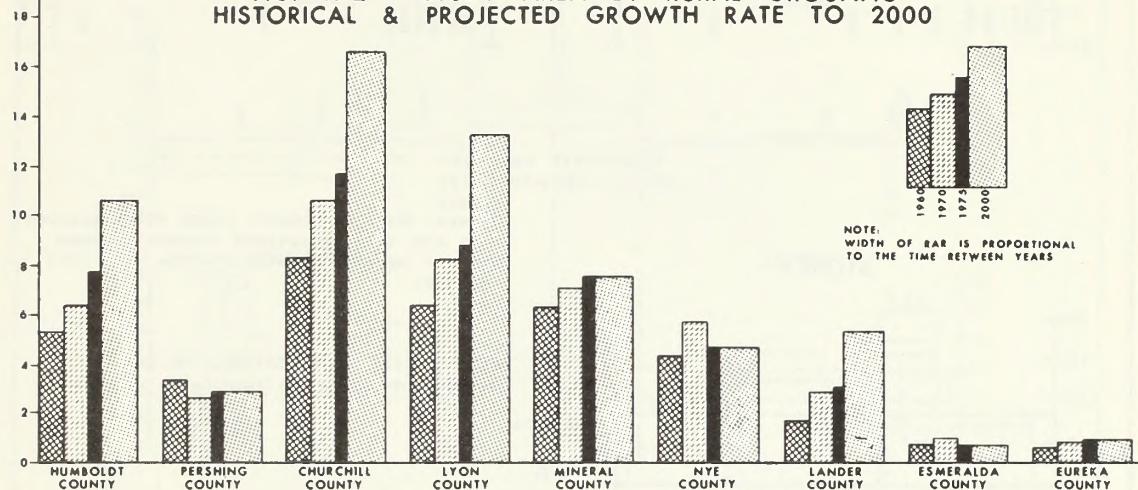
1970 Census of Population, Number of Inhabitants, Nevada, April 1971, U. S. Department of Commerce, Bureau of Census, Population Division; Building Bridges to Work, Nevada Employment Security Department, March 1975, Manpower Information and Research Section.

Population Projections For The Year 2000 developed by S.F. Chu, Bureau of Business and Economic Research, University of Nevada, Reno, March 1975.

Population projections for the year 2000 for Twin Falls and Jerome County, Idaho based on the rate of growth in those counties 1970-4 and projected to 2000.

POPULATION  
IN  
THOUSANDS

FIG. H-2 STUDY AREA BY RURAL GROUPING  
HISTORICAL & PROJECTED GROWTH RATE TO 2000



NOTE.  
WIDTH OF BAR IS PROPORTIONAL  
TO THE TIME BETWEEN YEARS

SOURCE:

1970 Census of Population, Number of Inhabitants, Nevada, April 1971, U. S. Department of Commerce, Bureau of Census, Population Division; Building Bridges to Work, Nevada Employment Security Department, March 1975, Manpower Information and Research Section.

Population Projections For The Year 2000 developed by S.F. Chu, Bureau of Business and Economic Research, University of Nevada, Reno, March 1975.

Population projections for the year 2000 for Twin Falls and Jerome County, Idaho based on the rate of growth in those counties 1970-4 and projected to 2000.



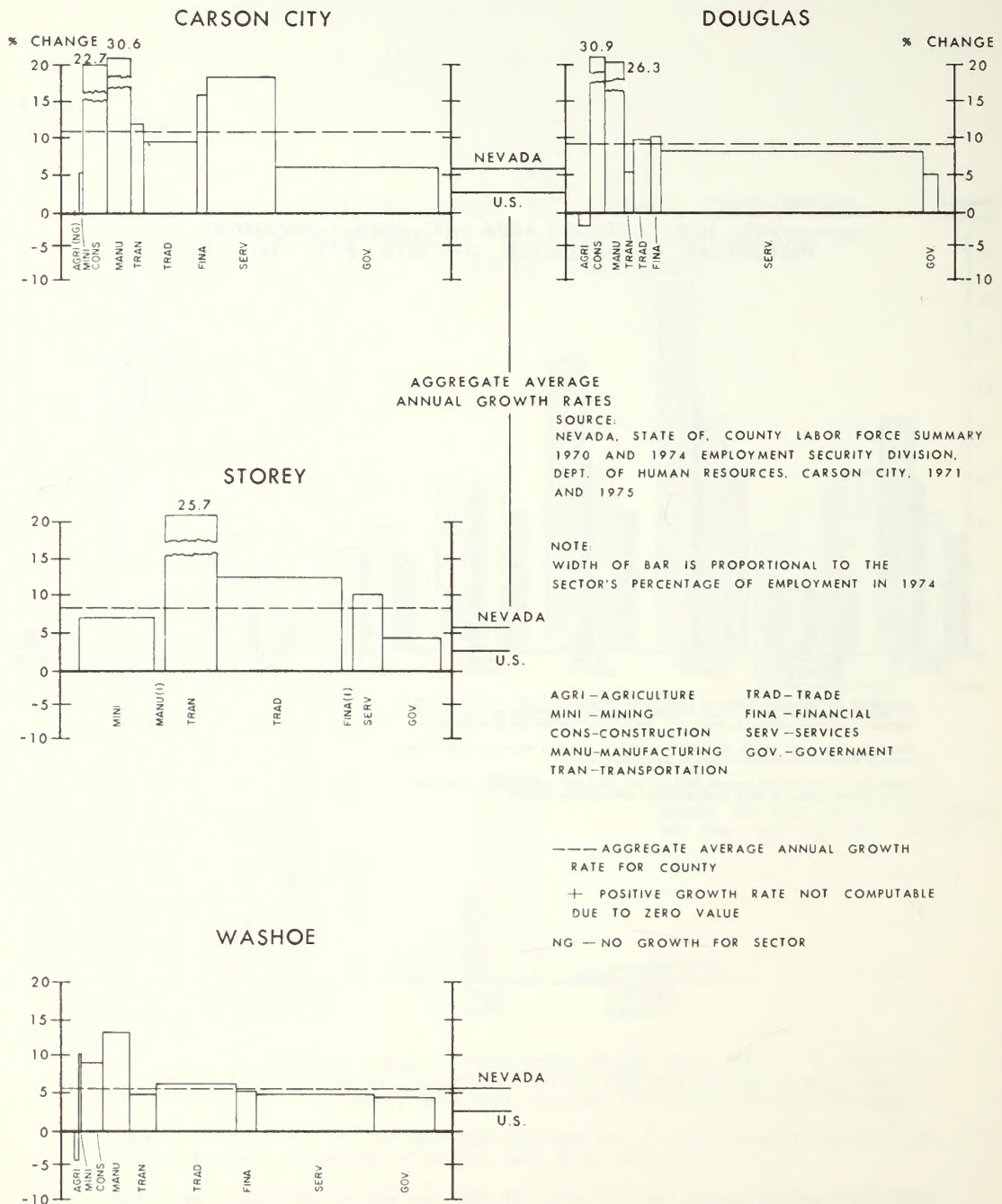


FIG. H-3  
CHANGE IN EMPLOYMENT BY ECONOMIC SECTOR  
URBAN COUNTIES

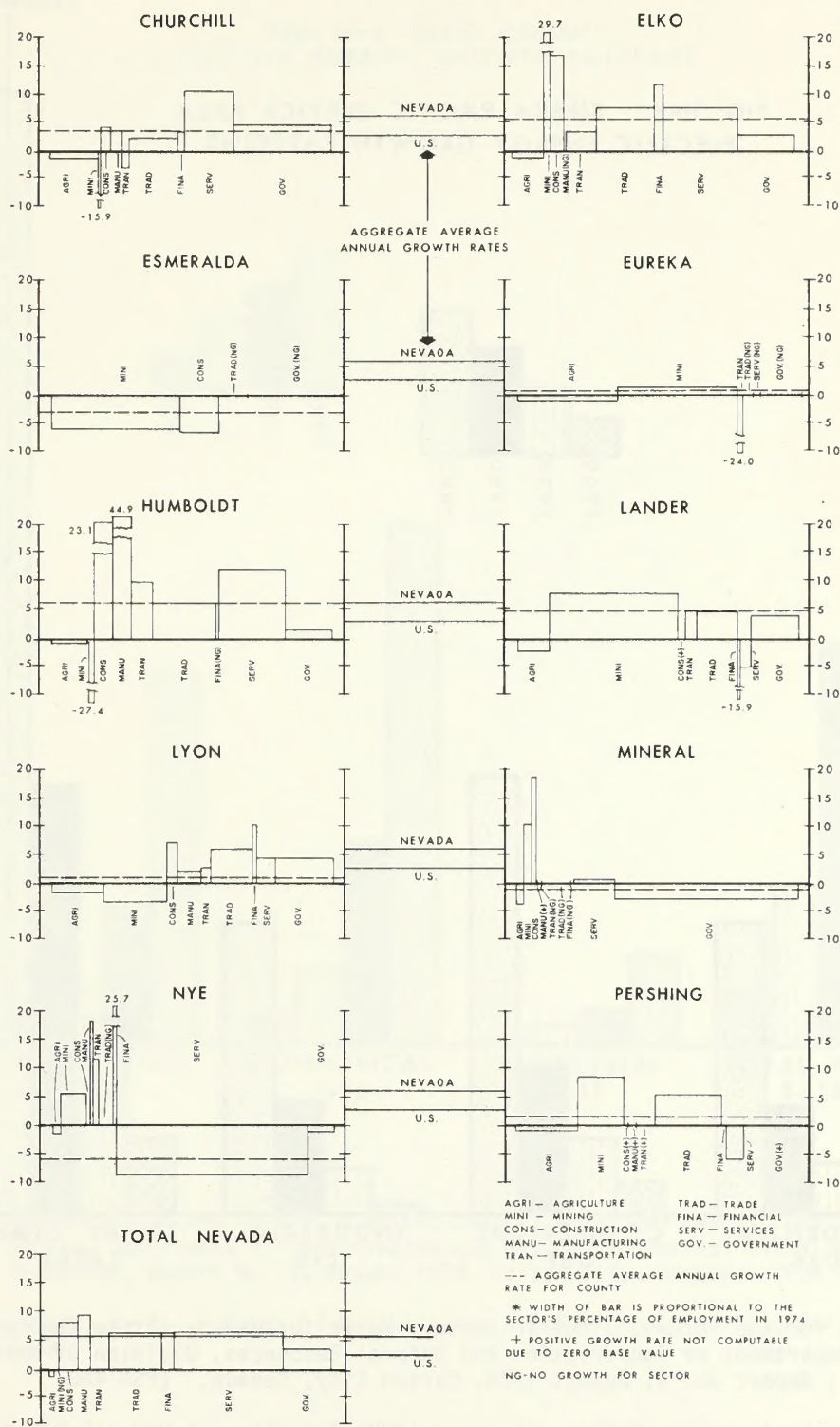
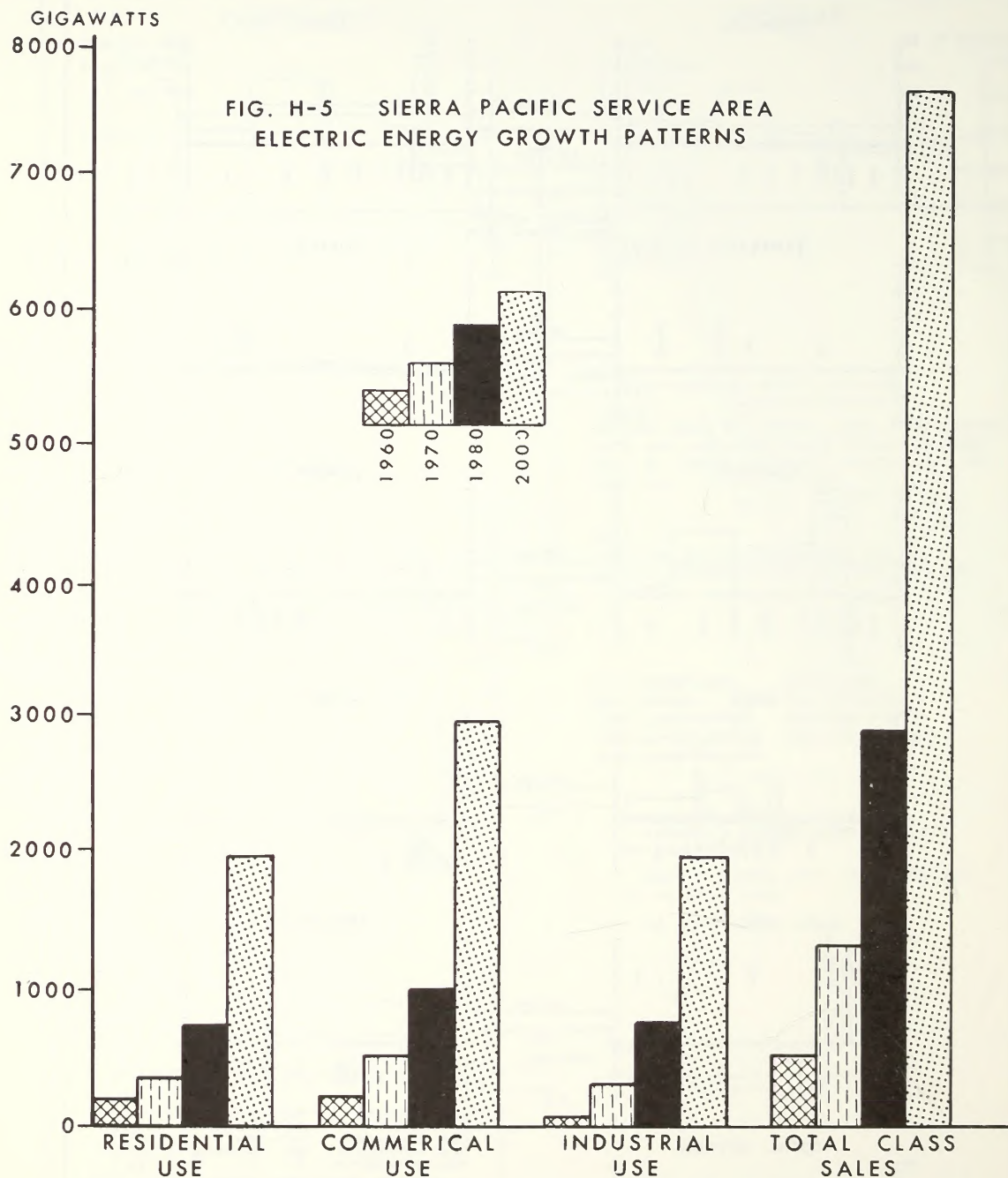


FIG. H-4  
 CHANGE IN EMPLOYMENT BY ECONOMIC SECTOR RURAL COUNTIES

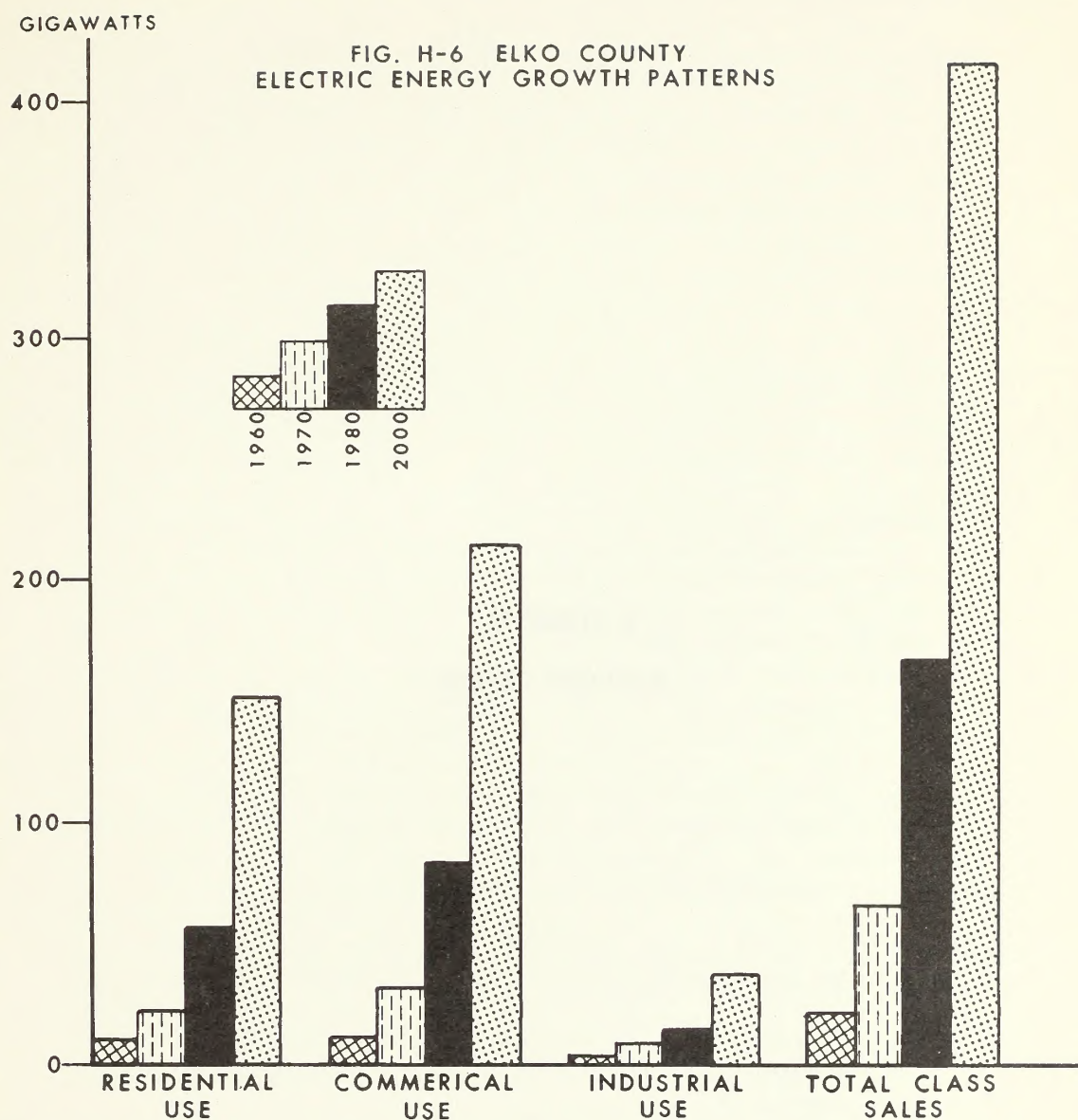




**SOURCE:**

Forecasts for the Future, Electric Energy; Water for Nevada, State Engineer's Office, Department of Conservation and Natural Resources, Division of Water Resources; Report No. 9, August 1974, Carson City, Nevada. (PSA 46B)

Energy use is in terms of Gigawatt hours (GWH) Annually. 1 GWH = 1,000 Megawatt hours.



**SOURCE:**

Forecasts for the Future, Electric Energy; Water for Nevada, State Engineer's Office, Department of Conservation and Natural Resources, Division of Water Resources; Report No. 9, August 1974, Carson City, Nevada. (PSA 46B)

Energy use is in terms of Gigawatt hours (GWH) Annually. 1 GWH = 1,000 Megawatt hours.





## APPENDIX J

### VISUAL RESOURCE



## VISUAL RESOURCE ANALYSIS

Purpose: The intent of this study is to serve as a creditable and meaningful evaluation of the visual resource for a large area of northern Nevada and southeastern Idaho. The subject area is generally located between Oreana, Nevada, and Burley, Idaho, along and extending for several miles on either side of Interstate 80 between Oreana and Wells, Nevada, and north from Wells on Highway 93 into Burley, Idaho. The subject area is currently under consideration by Sierra Pacific Power Company for location of a 230 kilovolt (kv) power transmission line.

Evaluation Process: The process utilized in this analysis has been recently developed by the Bureau of Land Management. A complete explanation of the procedure with examples of various phases appears in BLM Manual 6300 - Visual Resource Management. The overall objective is to provide a Bureau-wide, systematic approach for identifying scenery quality and setting minimum quality standards for management of the visual resource on national resource lands. Through the process, all national resource lands are classified into one of five visual resource management classes. Each of these classes contains a specific management objective for maintaining or enhancing the visual resource values. The visual management class assigned to a given land area depends upon three factors:

1. The inherent quality of the scenery being viewed.
2. The visual sensitivity level of the type of visual use it receives.
3. The visual zone it is in.

These three factors are analyzed through a six-step process to form visual management units. These six steps are briefly:

1. The determination and delineation of scenic quality.
2. The determination of the visual sensitivity level of each land area.
3. The identification and delineation of visual zones (the foreground, middleground, and background areas seen from travel routes or use areas).
4. The delineation and labeling of all areas where the combination of all three of the above factors are similar.
5. Assigning a visual resource management class to each of these areas.
6. The combining of contiguous areas of similar visual quality to form visual management units.

Scenic Quality: This process assigns a rating of: A-high scenic quality; B-moderate scenic quality; and C-low scenic quality, to all lands within a given area. The procedure



analyzes six key factors: land form, color, water, vegetation, uniqueness, and intrusions. Each of these factors is rated against a set of general criteria and a score assigned accordingly. When the evaluation is complete on a given land unit, the individual key factor scores are totalled and the letter rating A, B, or C is assigned, depending upon the total points received. The following evaluation sheet for scenic quality explains the criteria and scoring in more detail. (Note: Evaluation sheet to be supplied at a later time.) Although the majority of the study area is rated C in terms of scenic quality, many A and B areas do exist. Many of the A and B areas are associated with the mountain-type and foothill-type landscape character types, although several A and B areas are associated with the linear mountain ranges, particularly in the basin/range character type to the south of Interstate 80 in the Winnemucca and Battle Mountain area.

Visual Sensitivity Level: The next process in the evaluation is the determination of the visual sensitivity levels. (This, basically, is an indicator of people's concern for the relative importance or value of visual response to an area in relation to other areas within a given boundary.) One of the most important aspects of this procedure is criteria selection. Individual meetings were held with the BLM District Offices affected by this action including Winnemucca, Battle Mountain, Elko, Nevada and Burley, Idaho. In addition to these meetings, a recreation cultural, and visual resource workshop was held where various factions of the public were invited to aid in determining the criteria we would use for the visual sensitivity level determination. From these meetings three visual sensitivity level criteria were determined. They are:

1. The use volume of all highway and secondary transportation routes.
2. The intensity of various recreation values.
3. Zones of influence.

These criteria and evaluation factors for determining what category they fall into, high, medium, or low, are found in the following table.

<u>VISUAL SENSITIVITY</u>			
	<u>High</u>	<u>Medium</u>	<u>Low</u>
<u>Use Volume</u>	+600 Observers Per Day	60-600 Observers Per Day	-60 Observers Per Day



<u>Recreation Values</u>	3 or more major rec. values, i.e., - H <sub>2</sub> O relat- ed - Winter - Non H <sub>2</sub> O <u>or</u> Concentration of 2 or more specific acti- vities with established high use	<u>2 major rec. values</u> <u>or</u> 1 specific activity with established high use	Other identified use
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Zones of Influence	- Views from towns with +1000 pop. - Est. over- looks on highways	- Views from towns with less than 1000 pop. - Historic marker sites - Road side rest area	- All other
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Most of the subject area falls into the medium sensitivity level; however, some areas of considerable acreage are identified as having a high sensitivity level. The major ones are in the West Humboldt Range to the east and north of Lovelock and areas surrounding the Rye Patch Reservoir, several hundred acres on either side of Winnemucca, two large areas to the east and west of the community of Battle Mountain, and several miles along either side of Interstate 80 from Beowawe to approximately 20 miles beyond Elko. Another large high sensitivity level zone is located to the east of the community of Lamoille and several acres on either side of Highway 93 in the vicinity of the Nevada-Idaho border.

Visual Zones: The final major step in the process is the determination of visual zones. These zones which are actually seen areas from key observer positions such as highways, well traveled roads, overlooks, recreation sites, etc., are classified into three units:

1. Foreground-middleground zone - The foreground-middleground zone is the area visible from an observer position for a distance of five miles where management activities might be viewed in detail. The outer boundary of this zone is defined as the point where the texture and form of individual

- plants are no longer apparent in the landscape.
2. Background - The background is the viewshed which lies beyond the foreground-middleground zone from five miles to a maximum of 15 miles.
  3. Seldom Seen Zone - All areas not identified in the two previous zones are considered to be in the seldom seen zone. Generally, these are areas seen from low-use transportation routes or are beyond the 15-mile background zone.

Assigning Resource Management Classes: Following the identification and delineation of the three previous evaluation factors, all areas of common characteristics were mapped and labeled. Utilizing the following matrix, a visual resource management class was then assigned to each of the units with common characteristics. For example, all areas in Class B scenery, high sensitivity level and in the background zone, would be in Class III visual resource management class.

Chart for Determining Visual Resource Management Class

		VISUAL SENSITIVITY LEVEL <u>2/</u>						
		HIGH			MEDIUM			LOW
SPECIAL AREAS		I	I	I	I	I	I	I
SCENERY <u>1/</u> CLASS	A	II	II	II	II	II	II	II
	B	II	III	IV	III	IV	IV	IV
	C	III	IV	IV	IV	IV	IV	IV
		FG	BG	SS	FG	BG	SS	SS
		VISUAL ZONES <u>3/</u>						

2/ VISUAL SENSITIVITY LEVEL: High, Medium, Low

3/ VISUAL ZONES: FG - Foreground-Middleground  
 BG - Background  
 SS - Seldom Seen



Note: Class I applies only to classified special areas, e.g., Wilderness, Primitive, Natural Areas, etc. This quality standard is established through legislation or policy.

Class V applies to areas identified in the scenery quality inventory where the quality class has been reduced because of unacceptable intrusions.

In this study three visual resource management classes were identified. Each of these classes described the visual resource value in terms of highly significant, moderately significant, or significant and the different degrees of modification allowed in the basic elements of the landscape. They are:

#### CLASS II

Changes in any of the basic elements (form, line, color, or texture) caused by a management activity should not be evident in the characteristic landscape.

#### CLASS III

Changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape; however, the changes should remain subordinate to the visual strength of the existing character.

#### CLASS IV

Changes may subordinate the original composition and character, but must reflect what could be a natural occurrence within the characteristic landscape. The visual resource management classes are delineated on the Visual Resource Management Map, p. 2-73.

#### VISUAL CONTRAST RATING

The BLM has devised a visual resource contrast rating method to measure the impact of proposed activities to determine whether or not they meet the standards for each visual resource management class. A complete explanation of this system can be found in the 6320 section of the BLM Manual.

Briefly, the system is based on the premise that the degree to which a management activity adversely impacts the visual quality of the landscape depends upon the amount of visual contrast that is created between the activity and the existing landscape character. The amount of contrast between a proposed activity and the existing landscape character can be measured by separating the landscape into its major features (land form features,



vegetation, and structures), and then predicting the magnitude of change in contrast of each of the basic elements (form, line, color, and texture) to each of the features. Assessing the amount of contrast for a proposed activity in this manner can give a good indication of the severity of impact and serve as a guide in determining what is required to reduce the contrast to the point where it will meet the visual resource management classes for the area.

Use of the Contrast Rating - The contrast rating must be applied in the planning stages to all proposed land management activities that will disturb the soil, change or remove vegetation, or place a structure in the landscape. It should also be applied to all areas that are identified as needing rehabilitation or enhancement. Application of the contrast rating system should be done from the most critical view point or points that are or will be commonly in use although a general "overall" application can be made to give an indication of the impact by the proposed activity. When applying the rating system, keep in mind the following variables are the factors which determine how well the contrast is seen:

- Distance from which the project will be viewed.
- Angle of observation. The apparent size of a management activity is directly related to the angle between the viewers' line-of-sight and the slope being viewed. As this angle nears 90°, the maximum area is viewable and becomes most critical.
- Length of time the project is in view. If the viewer has only a brief glimpse of the project, the contrast can almost be disregarded. If, however, the project is subject to view for a long period, as from an overlook, the opportunity to detect contrast becomes very critical.
- Relative size or scale of the project in relation to its surroundings.
- Season of the year and the effects of seasonal changes. Contrast rating should be done considering the heavy or most critical use season.
- Light and how it will effect the project being viewed.
- The effect time has on the healing process. Few projects can be expected to meet the visual classes immediately upon completion.

With some long-term projects, such as a strip mine, it may be desirable to have both short-term (5 years) and long-term objectives (completion of the project).

#### Visual Constrast Application

Landscape Description - Write a brief description of the exist-



ing landscape. Describe each of the landscape features (land form, vegetation, structures) in terms of the basic elements (form, line, color, texture).

Activity Description - Briefly describe and define the proposed activity or project. Tell how it will be accomplished and the anticipated impacts on the landscape by feature and element.

Methodology - The visual contrast created by a management activity can be measured by determining the contrast caused by that activity in each of the basic elements.

The ease of detecting contrast in the basic elements varies on a scale from 4 (form) to 1 (texture). By assigning values that indicate degree of contrast, 3 for strong, 2 for moderate, and 1 for weak, we can set up a direct multiplier for an indication of the strength of the contrast.

Elements

Form	- 4
Line	- 3
Color	- 2
Texture	- 1

Degree of Contrast

Strong	- 3
Moderate	- 2
Weak	- 1
None	- 0

The following rating sheet is then used to evaluate the proposed action.

VISUAL RESOURCE CONTRAST RATING SHEET

Project: \_\_\_\_\_

Landscape Character Type: \_\_\_\_\_

	<u>Element</u>	<u>Contrast</u>	<u>Score</u>	<u>Maximum</u> <u>Score Possible</u>
<u>Land Form</u> <u>Features</u>	Form - 4 X	_____		
	Line - 3 X	_____		
	Color - 2 X	_____		

Texture- 1 X \_\_\_\_\_

Total Land Form Feature Score \_\_\_\_\_ 30

Vegetation  
Features

Form - 4 X \_\_\_\_\_

Line - 3 X \_\_\_\_\_

Color - 2 X \_\_\_\_\_

Texture- 1 X \_\_\_\_\_

Total Vegetation Feature Score \_\_\_\_\_ 30

Structures  
Features

Form - 4 X \_\_\_\_\_

Line - 3 X \_\_\_\_\_

Color - 2 X \_\_\_\_\_

Texture- 1 X \_\_\_\_\_

Total Structures Feature Score \_\_\_\_\_ 30

Individual Feature Scores:

- 1-10: Indicated contrast can be seen, but does not attract attention.  
11-20: Attracts attention, the contrast begins to dominate the characteristic landscape.  
21-30: Demands attention, will not be overlooked.

Degree of Contrast:

Strong	- 3
Moderate	- 2
Weak	- 1
None	- 0

Note: Refer to BLM Manual 6230 for complete explanation of the contrast rating system.

Contrast Rating as a Measure of Meeting Established Visual Resource Management Classes - The following is applied to determine if the proposed activity will meet the visual resource management class assigned to an area.



Class I. The contrast rating for any one element may not exceed 1 (weak) and the total contrast rating for any feature must be less than 10.

Class II. The contrast rating for any one element should not exceed 2 (moderate) and the total contrast rating for any feature may not exceed 10.

Class III. The contrast rating for any one element should not exceed 2 (moderate) and the total contrast rating for any feature may not exceed 16.

Class IV. The total contrast rating for any feature should not exceed 20.

Class V is an interim classification for rehabilitation or enhancement of an area. Based upon its indicated potential visual resource management class (II, III, or IV), select the appropriate contrast rating.

Contrast Rating - Using the methodology described, determine a contrast rating for the proposed activity. The rating quickly points out the elements and the features that will cause the greatest visual impact. This provides a guide to the most effective method of reducing the visual impact of a proposed activity or project. Those elements with the highest contrast rating are the ones that can be attacked and lowered most effectively.

If the activity does not meet the requirements for the VRM Class that has been established for the area, look at the rating scores and see what can be done to reduce the impact more effectively, then redesign the project and run through the rating process again. If the proposed activity still will not meet the requirements of the VRM Class, a landscape architect should be called in to re-assess the design. If the VRM Class requirements still cannot be met, a written recommendation by the landscape architect should be made to the District Manager to either go ahead with the proposal with the impacts reduced as much as possible, revise the proposal, or abandon the proposal in favor of the protection of the visual resource.



# The Nevada State Museum

Department of Anthropology

University of Nevada, Reno

Box 221, Reno, Nevada 89507

May 1, 1981

## APPENDIX K

### HISTORICAL/ARCHEOLOGICAL





## The Nevada State Museum

CAPITOL COMPLEX  
CARSON CITY, NEVADA 89710  
Telephone (702) 885-4810

May 17, 1976

Mr. E. I. Rowland  
State Director, Nevada  
Nevada State Office  
Room 3008 Federal Building  
300 Booth Street  
Reno, Nevada 89509

re: Historical/Archaeological  
sections Chapters II - IV,  
Oreana to Hunt EIS

Dear Mr. Rowland,

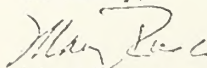
This is to confirm my various telephone discussions with Larry Hand of your Oreana to Hunt EIS Team on the above referenced matter.

The Nevada Archaeological Survey, Nevada State Museum conducted an intensive archaeological and historical reconnaissance along a 60 m wide segment of the O'Neil Basin Corridor, during which we recorded a total of 151 historical and archaeological sites. In addition we have made a general archive search along the Adobe, Metropolis and O'Neil Basin Corridor in order to evaluate the information compiled for these by Mr. Hand and others in your EIS team. On the basis of the intensive reconnaissance and the archive search I think it is reasonable to conclude:

- 1) The number, type and significance of archaeological and historic sites along the Adobe and Metropolis Corridor would probably not vary significantly from the O'Neil Basin Corridor.
- 2) More sites and especially more extensive sites might well be found along the Humboldt River Corridor, which follows this major river. The terraces and older flood plains of this river are the location of many semi-permanent base camps occupied intermittently for at least the past 5,000 years. It was also the location of historic trails and source of the earliest historic settlements in Northern Nevada.

I appreciate being kept informed on this and other similar projects.

Sincerely,

  
Mary Rusco

Following is a list of comment letters received on the draft environmental impact statement for the proposed project. The comments are listed in the order in which they were received. The project is described in Chapter 2 of the statement. The project is a proposed development of a new facility for the production of a certain product. The project is located in a certain area. The project is expected to have certain effects on the environment. The project is expected to have certain effects on the community. The project is expected to have certain effects on the economy. The project is expected to have certain effects on the culture. The project is expected to have certain effects on the society. The project is expected to have certain effects on the environment. The project is expected to have certain effects on the community. The project is expected to have certain effects on the economy. The project is expected to have certain effects on the culture. The project is expected to have certain effects on the society.

## APPENDIX L

### COMMENT LETTERS

1. Comment letter received from [Name] on [Date].
2. Comment letter received from [Name] on [Date].
3. Comment letter received from [Name] on [Date].
4. Comment letter received from [Name] on [Date].
5. Comment letter received from [Name] on [Date].
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31. Comment letter received from [Name] on [Date].
32. Comment letter received from [Name] on [Date].
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34. Comment letter received from [Name] on [Date].
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47. Comment letter received from [Name] on [Date].
48. Comment letter received from [Name] on [Date].
49. Comment letter received from [Name] on [Date].
50. Comment letter received from [Name] on [Date].



Following is a list of organizations and individuals from whom comments were received on the draft environmental statement. The numbers assigned correspond to the numbers used in the comment and response section, Chapter 9, of the FES.

1. Pacific Northwest River Basins Commission
2. Rural Electrification Administration (No. 1)
3. Federal Aviation Administration (No. 1)
4. Bureau of Land Management, Carson City District Office
5. Bureau of Outdoor Recreation
6. Rural Electrification Administration (No. 2)
7. Federal Highway Administration
8. Steven L. Cousin
9. Soil Conservation Service
10. Nevada State Museum
11. Elko County Commissioners (No. 1)
12. Mr. Rory Hogen, Representing Friends of Nevada Wilderness
13. U. S. Army Corps of Engineers
14. Mr. Don M. Deck
15. Southern Pacific Land Company
16. Advisory Council on Historic Preservation
17. Ms. Rose Strickland
18. Energy Research and Development Administration
19. Sierra Club
20. Airways Engineering Corporation
21. Mr. Phillip Farrell
22. Union Pacific Railroad
23. Washoe County Game Management Board
24. Nevada Mining Association
25. Nevada Outdoor Recreation Association
26. Ms. Tina Nappé
27. Dr. Grant T. Kein
28. Mr. Dan S. Leeth
29. Federal Aviation Administration (No. 2)
30. Idaho State Historical Society
31. Nevada Wildlife Federation
32. Sierra Pacific Power Company (SPPCO) (No. 1)
33. SPPCO (No. 2)
34. Idaho Department of Fish and Game
35. Bureau of Reclamation
36. Forest Service (No. 1)
37. National Park Service
38. Private Citizens
39. Idaho State Clearinghouse
40. Forest Service (No. 2)
42. Bureau of Land Management, Boise District Office
43. Fish and Wildlife Service
44. Elko County Commissioners (No. 2)
45. Environmental Protection Agency

46. Bureau of Land Management, Winnemucca District Office
47. T Lazy S Ranch
48. Nevada State Clearinghouse
49. Federal Power Commission
50. Chilton Engineering, Inc.
51. Nortrust Farm Management, Inc.
52. Lander County Fair and Recreation Board
53. Nevada Department of Fish and Game
54. SPPCO (No. 3)
55. SPPCO (No. 4)

(Comment letters which did not bear on the adequacy of the draft statement have not been printed in this section.)



PACIFIC NORTHWEST  
RIVER BASINS COMMISSION



1 COLUMBIA RIVER • P. O. BOX 908  
VANCOUVER, WASHINGTON • 98660

October 22, 1976

Mr. E. I. Rowland  
State Director (N-911)  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

We have reviewed the draft environmental statement prepared on the Sierra Pacific Power Company's proposed 230/345 kv transmission line from Oreana, Nevada, to Hunt, Idaho, and have no comments to offer relative to the environmental impact of the proposed action.

Thank you for the opportunity to review the draft.

Sincerely yours,

*Jack G. Johnson*

Jack G. Johnson  
Planning Director

JGJ:nr

(TS 206/606-3001 • 503/285-0407 • 206/604-2581)

UNITED STATES DEPARTMENT OF AGRICULTURE  
RURAL ELECTRIFICATION ADMINISTRATION  
WASHINGTON, D.C. 20530

OCT 28 1976

Mr. E. I. Rowland, Nevada State Director  
United States Department of the Interior  
Bureau of Land Management  
Room 3008 Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

Thank you for your letter of October 18, 1976, regarding the Draft Environmental Statement prepared on the Sierra Pacific Power Company's proposed 230/345 kv transmission line from Oreana, Nevada, to Hunt, Idaho. When the statement arrives, the review will be assigned to the Western Area - Electric within REA.

If REA has pertinent comments concerning the statement, they will be forwarded to you by the due date of December 10, 1976, by the Director of the Western Area - Electric, Mr. Charles W. Fitch.

Sincerely,

*David H. Hayward*  
DAVID H. HAYWARD  
Acting Director

DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

NORTHWEST REGION  
FAA BUILDING, BOEING FIELD  
SEATTLE, WASHINGTON 98108

003



OCT 28 1976

Mr. E. I. Rowland  
State Director (N-911)  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Reference: 1792 Oreana-Hunt-ES (N-911)

Dear Mr. Rowland:

This is in reply to your request for comments relevant to the environmental statement for a proposed Sierra Pacific Power Company transmission line between Oreana, Nevada, and Hunt, Idaho.

That portion of the line which is within the State of Idaho would come under the territorial jurisdiction of our office. FAA involvement with respect to such proposals consists of obstruction evaluation of Notices of Proposed Construction or Alteration (FAA Form 7460-1), as required by DOT Advisory Circular 70/7460-2F. Such studies consider only the effect on the navigable airspace and therefore do not encompass environmental issues.

Sincerely,

*Milton O. Sirote*  
MILTON O. SIROTE  
Airspace Specialist



IN REPLY REFER TO  
E3035

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF OUTDOOR RECREATION  
PACIFIC SOUTHWEST REGIONAL OFFICE

BOX 3602  
430 GOLDEN GATE AVENUE  
SAN FRANCISCO, CALIFORNIA 94102  
November 9, 1976

Memorandum

To: State Director, Bureau of Land Management, Nevada  
From: Regional Director  
Subject: Review of draft environmental statement for the Sierra Pacific Power Company 230/345 KV Transmission line from Oreana, Nevada to Hunt, Idaho, Nevada and Idaho (OES 76/42).

The following are our comments on the subject draft environmental statement submitted to us by memorandum dated October 8, 1976.

Specific Comments

Pages 67-77. The environmental statement provides an excellent description and map of recreational lands in the vicinity of the project.

Page 134. We concur with your finding that the O'Neill Basin corridor would impose the greatest adverse impact upon existing recreation opportunities and future recreational use in the project area.

Page 166. Visual Resource and Recreation Mitigating Measures. This section should note that the effectiveness of the proposed mitigation can vary considerably depending upon the existing resource base. Constructing the transmission line in the O'Neill Basin corridor would be a major intrusion into a large expanse of relatively natural land. It is unlikely that the magnitude of the impact could be reduced significantly through selection of individual tower locations. Further, when considering the type, variety and amount of recreation use (Page 134) that occurs along this corridor, particularly in the primitive areas just south of Humboldt National Forest, we question whether the mitigation measures discussed would diminish the adverse effect the line would have on recreational activity.



UNITED STATES DEPARTMENT OF AGRICULTURE  
RURAL ELECTRIFICATION ADMINISTRATION  
WASHINGTON D.C. 20250

006

NOV 12 1976

SUBJECT: DEIS Sierra Pacific Power Company  
230-345 KV Transmission Line  
Oreana, Nevada to Hunt, Idaho

TO: Mr. E. I. Rowland  
State Director, Nevada State Office  
Bureau of Land Management  
Room 3008, Federal Building  
Reno, Nevada 89509

We have reviewed the subject Draft Environmental Impact Statement and find that it is comprehensive and well prepared. However, a deficiency we would like to point out is that no conclusions are made by BLM as to which of the four corridors is preferred at this stage. The various comparisons of the environmental impacts of the corridors indicate that a considerable amount of time and effort went into its preparation. However, the reviewer cannot comment on BLM's proposed major Federal action if one does not know which corridor BLM prefers. In effect, BLM's proposed action is not sufficiently defined so that the reviewer can distinguish between BLM's proposed action and BLM's alternatives (including alternate corridors). This is required in order to comply with Section 102(C) of the National Environmental Policy Act (NEPA) of 1969.

The following comments address specific statements raised in the DEIS.

Page 20, next to last paragraph: If any fertilizers, insecticides, etc., are used during rehabilitation of disturbed areas, they must be approved by EPA and USDA. It is recommended that disturbed areas be reseeded with native vegetation. The Soil Conservation Service should be consulted before taking any action on reestablishing a vegetative cover.

Page 67, second paragraph, fourth line: The correct name is "Rural Electrification Administration."

Page 124, third paragraph, last sentence: Are there any known peregrine falcon or southern bald eagle nests in the vicinity of the four corridors? If there are they should be indicated and mitigative measures should be presented.

We do recognize, however, the value of these mitigating measures towards maintaining the visual quality of the I-80 and Humboldt River viewsheds.

*Frank E. Sympson*  
Frank E. Sympson

cc: DEA

006

2

Mr. E. I. Rowland

Page 126, Agriculture-Potential: There is no discussion of the impact, if any, of the proposed project on Prime and Unique Farmland. The Nevada State Conservationist should be consulted as to potential location relative to transmission corridors.

Page 141, top paragraph: No solution is provided as to the conflict between the Burley District's recommended route and the applicant's proposed route. How does BLM plan to resolve this conflict?

*Charles W. Fitch*  
CHARLES W. FITCH  
Director  
Western Area - Electric





U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
REGION NINE  
Two Embarcadero Center, Suite 530  
San Francisco, California 94111

ARIZONA  
CALIFORNIA  
NEVADA  
NEW MEXICO  
UTAH  
WASHINGTON  
YUCCA

007

IN REPLY REFER TO  
9ED

November 16, 1976

Mr. E. I. Rowland  
State Director (N-911)  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

We have reviewed the Draft Environmental Impact Statement for the Sierra Pacific Power Company's proposed 230/345 kv transmission line from Oreana, Nevada, to Hunt, Idaho, and, since it does not affect any highway on the Federal-aid System, have no specific comments to offer.

We appreciate this opportunity to comment on the Draft Statement.

Sincerely yours,

*F. E. Hawley*  
F. E. Hawley  
Regional Administrator

November 17, 1976

Mr. E. I. Rowland  
State Director, Nevada  
Nevada State Office  
Room 3008 Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

This letter is in regard to the draft environmental statement prepared by the B.L.M. with regard to the 230 K.V. transmission line being contemplated by Sierra Pacific Power Company.

I am personally writing to express my support for the proposed power line to pass through the O'Neil Basin Corridor, because of the following requirements:

- total distance 286 miles
- construction time 10 months
- power line construction by using helicopters
- The estic quality of this high sage desert will be degraded yet the adverse effect of the power line will be less overall because in similar situations in Southeast Idaho no appreciable change in wild life habitat such as deer migration or disruption of sage grouse habits have significantly occurred.
- Also with regard to the two endangered species listed in the draft E.I.S. (i.e. the bat and trout) it appears to me that overwhelming public opinion in favor of the power line will out weigh the value of the two species.

I further submit that the shorter route of 286 miles should be taken if the state of Nevada grants a permit to Sierra Pacific Power Company because soil and watershed in 241 acres would be permanently impacted. This would mean that the shorter corridor would disturb less soil.

In the O'Neil Basin the major vegetation is sage brush, this due to its nature will naturally restore itself within approximately five to eight years, causing an inconvenience to birds and small animals who use the area for nesting and protection.

008

In my opinion the transmission lines will result in undesirable visual impacts, but personally the added need for electrical power to satisfy domestic and agricultural needs can justify the degrading of the usual resources.

I would like to encourage the B.L.M. to require Sierra Pacific Power Company to follow public law 91-190, the National Environmental Policy Act (NEPA) of 1969, especially section 102 paragraph (2) (C), section (IV) the relationship between local short term uses of mans environment and the maintenance and enhancement of the long term productivity.

I further submit that the O'Neil Basin Corridor should be used because of the amount of impacts to wildlife, especially deer, antelope, sage grouse etc.

Property taxes on the transmission line will be the primary tax benefit to the governments through whose jurisdiction the line passes.

I appreciate the opportunity of expressing my views on the draft environmental statement of Sierra Pacific Power Company published by the B.L.M.

Sincerely,

*Steven L. Cousin*  
Steven L. Cousin

UNITED STATES DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE

P. O. Box 4850, Reno, Nevada 89505

November 22, 1976

Mr. E. I. Rowland  
State Director  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

We have reviewed the draft environmental statement on Sierra Pacific Power Company 230-345 KV Transmission Line numbered 1792 Oreana-Hunt ES (N-911). The statement looks fine. Mitigation measures are planned as necessary on irrigated cropland and for erosion.

We do feel that some mention should be made about any impacts to prime or unique farmland. This question should be addressed even if the acreage is slight. Also there was no mention of effects on other agency projects.

We appreciate the opportunity to review and comment on the statement.

Sincerely,

*Gerald Thola*  
GERALD THOLA  
State Conservationist





# The Nevada State Museum

CAPITOL COMPLEX  
CARSON CITY, NEVADA 89710  
Telephone (702) 885-4916

November 19, 1976

Mr. Ed Tilsey  
Bureau of Land Management  
Room 308 Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Tilsey,

I have been asked to review those portions of the Draft Environmental Statement on the Sierra Pacific Power Company 230-345 kv Transmission Line from Oreana, Nevada to Hunt, Idaho, which relate to archaeological and historic values.

A team from the Nevada State Museum under my direction reviewed existing archaeological and historic records and conducted an intensive archaeological reconnaissance along the O'Neill Basin Corridor and extensive reconnaissance along a sample of alternate corridors. This project was conducted in order to assess archaeological and historic values, predict impact of proposed construction on sites eligible to the National Register and recommend measures to avoid or mitigate these impacts.

The results of this field work were reported and this report was consulted in the preparation of the Draft Environmental Statement.

I have reviewed the document and find that it recommends measures to mitigate adverse impacts to certain sites along the O'Neill Basin Corridor but fails to mention others which are subject to unavoidable adverse impact, including:

- (1) In addition to the specific recommendations (ES: 168) about the strategic placement of constructions ("poles"), we recommended the avoidance of certain alternate access roads for the O'Neill Basin Corridor (Part III: 2-3).
- (2) A systematic collection was made of archaeological specimens from the smaller surface sites as reported in the Draft Statement (p. 98) and we indicated in our report that no further field work was judged to be required to mitigate predicted adverse impacts. We did point out, however, the need for a scientific report of our findings in order to complete mitigation and this is not stipulated in the Draft Environmental Statement (see Part III: 5-6).

Mr. Ed Tilsey

November 19, 1976  
Page 2

(3) Including the sites in Sacramento Canyon which are described in the Environmental Statement as subject to unavoidable adverse impact which requires mitigation (p. 167-168), there are a total of 24 archaeological sites along the O'Neill Basin Corridor which we judge to be eligible to the National Register and which are subject to unavoidable adverse impact if the line is constructed along that route.

These sites are reported in Part II (p. 17-21, and Appendix A) and we recommended additional field work which in our opinion would provide adequate mitigation of impacts (Part III, p. 6-7). Results of this field work should be presented in a scientific report.

In all other respects the Draft Environmental Statement adequately reports the results of our work and I find the recommendations for mitigation procedures to be adequate. I do not wish to imply by the above comments that the Bureau of Land Management is constrained to accept our conclusions about the eligibility of certain archaeological sites to the National Register or our recommendations regarding appropriate mitigation measures. I do wish to have assurance that they have been considered.

Sincerely,

*Mary Busco*

Mary Busco, Archaeologist  
Nevada Archaeological Survey -  
Central Division  
Nevada State Museum

MR:lb  
Attachment

010

ATTACHMENT

010

Tracy to Oreana Corridor and the Sites along the O'Neill Basin Corridor, judged eligible for the National Register of Historic Places, subject to adverse impact by construction; Recommendations for their protection and/or mitigation of unavoidable adverse impact.

Sites judged to be eligible to the Register, which can be preserved either completely or partially by the strategic placement of constructions or the selection of alternate access roads are:

26Pe0014(p), 26Pe342, 26Ek1505, 26Ek1522, 26Ek1524, 26Ek1549, 26Ek1536, 26Ek1540.

The following sites which were judged to be eligible to the Register, were not systematically collected upon discovery. They include six of the sites listed above which can be partially protected by the strategic placement of power line constructions and a total of 19 sites which could not be adequately recorded or collected because of inclement weather. Unavoidable adverse impacts to these sites could be mitigated by the systematic collection and recording of information:

26Ek1505, 1522, 1524, 1536, 1540, 1542, 1546, 1547, 1548, 1549, 1558, 1562, 1566, 1567, 1569, 1570, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580.

Attached are copies of portions of our Archaeological Record maps which show the location of the sites recorded along the proposed O'Neill Basin Corridor.

For your convenience, sites which are subject to unavoidable adverse impact which can be partly or completely protected by strategic pole placement and/or avoidance of certain alternate access roads are marked with yellow (●).

Sites which will be subject to unavoidable adverse impacts which can be adequately mitigated by recording of information and systematic collection of artifacts are marked with red (●).

Small sites which were judged eligible for the Register on the basis of information they might yield and which were recorded and collected during the reconnaissance are marked with green (●). No additional field work needed at these sites but if adequate mitigation is interpreted to include a scientific descriptive report, additional analysis and report preparation is required.

Abstracts of the site records of all sites referred to above are attached. They are in numerical/alphabetical order by site number.

011

JOHN C. CARPENTER  
THOMAS L. HURD  
GEORGE R. E. BOUCHER  
COUNTY MANAGER  
702-738-8318

Board of County Commissioners

ELKO COUNTY COURTHOUSE  
ELKO, NEVADA 89801

November 24, 1976

011

Mr. E.I. Rowland  
State Director (N-911)  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

RE: 1792  
Oreana - Hunt ES  
(N-911)

Dear Mr. Rowland:

The County of Elko has received the letter and draft environmental statement prepared on the Sierra Pacific Power Company's proposed 230/345 KV transmission line from Oreana, Nevada to Hunt, Idaho.

Potentially, a formal comment involving the Board of County Commissioners and Elko County Planning Commission will not be available prior to December 10, 1976. This letter is to verify if a statement or comment is to come from the County of Elko, it will be after the December 10th date.

Sincerely yours,

*George R. E. Boucher*  
GEORGE R. E. BOUCHER  
Elko County Manager

GREB/lm



Mr. E. R. Rowland, State Director  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

November 30, 1976

Dear Mr. Rowland,

Thank you for the opportunity to comment on your Draft Environmental Impact Statement on the Sierra Pacific Power Line from Oreana to Hunt. Overall the statement was fairly well written, and wasn't biased in favor of any one route. There were a few points that could have been explained more substantially, and I will discuss some of these.

First let me say that after looking at the environmental impacts of each of the routes, I conclude that the Highway corridor is by far the best route, and the O'Neil corridor, which Sierra Pacific prefers, is the worst.

The Highway corridor, which follows a route already in use as a transportation and power line corridor, would require the disturbance of much less acreage for access roads, and follows a route which is relatively level overall. This will minimize the amount of vegetative disturbance, and therefore reduce soil erosion and adverse effects on wildlife.

The O'Neil corridor goes through the steepest areas, and would require much longer access roads. This corridor also cuts through large amounts of wild land. The impacts on this sensitive area would be much greater than along the highway. In addition, ORV's would use the new access roads, resulting in greater damage to these presently inaccessible areas.

There seem to be two major reasons why the highway route isn't preferred. The first is the claim that the highway route would create more visual impact. Since Highway 80 and power lines already bisect this area, the visual quality is low. One more isn't going to make much difference over most of the route, and modifications can be made in the line position and pole size and color in any area that would be specifically hurt by a visual intrusion. Further, if people continue to refuse to take energy conservation seriously, the payment should be more than just monetary. We should see what we're asking for, instead of hiding it away.

The other reason is that the Highway route will cost too much. The difference in total cost between the two lines appears to be insignificant, and an intercept line to the O'Neil Wells from the O'Neil line would probably make it cost more. The main problem

seems to be in acquisition of private property. According to your report, acquisition will be needed along 33% of the O'Neil corridor, and 52% of the Highway corridor (p. 142). Do your total cost estimates reflect this difference? This isn't clear in the EIS. Are costs of revegetating and covering unused access roads, as well as upkeep of access roads used in the future included in the total cost? The cost of the interceptor line was also left out. These costs could make a big difference in which route is best.

The idea that the Highway route will be more expensive because of private land acquisition is what disturbs me the most. This idea assumes that our public lands don't cost anything because only a few people use them. These wild areas are among our most precious resources, and once they are gone there is no way to get them back. This cost is rarely taken into account, because there aren't enough dollars in the world to replace these lands.

Two more points seem worthwhile to mention. Firstly, it seems that in a project of this magnitude, an alternate route to the O'Neil should have been thoroughly investigated as part of pre-building procedures. This apparently was not done, at least in the area of archaeological values. It makes me wonder about how carefully other values were examined on the alternate corridors.

The second point concerns the section on ecological interrelationships, in which you talked about the problem of increased salt concentrations in the river below newly irrigated croplands (p. 155-S7). This worries me, because the Lovelock area is already important agriculturally. Don't these farmers use this water? If it's already salty by the time it reaches Lovelock, this will be self-defeating economically. The salt will also affect vegetation in the Humboldt Sink marshes, and many animals depend on this vegetation as their food source. For example, sego pondweed is very important to the canvasback and redhead ducks in choosing a nesting area. This problem should be given more consideration in the future.

In closing this rather disjointed letter, let me ask a question. Sierra Pacific stated that the people in rural counties didn't seem to be interested in where the power line went. Were these people informed that the Highway route would be longer, adding a larger tax revenue to their counties? Thank you.

Sincerely,

*Rory Hogen*

Rory Hogen  
P. O. Box 286  
Steamboat, Nevada 89436

Representing Friends of Nevada Wilderness



DEPARTMENT OF THE ARMY  
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS  
630 Sansome Street, Room 1216  
San Francisco, California 94111

REPLY TO  
ATTENTION OF

SPDPD-R

2 DEC 1976

Mr. E. I. Rowland  
State Director, Nevada  
Bureau of Land Management  
U.S. Department of the Interior  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

This is in response to your letter of 15 October to the Executive Director of Civil Works, Office of the Chief of Engineers, Washington, D.C., and also your letter of 18 October to the District Engineer, Sacramento, in which you requested Corps of Engineers review and comments on the Draft Environmental Statement for the Sierra Pacific Power Company's proposed 230/345 KV transmission line from Oreana, Nevada, to Hunt, Idaho. In accordance with our review procedures, this letter shall serve as the consolidated response of the District Engineer, Sacramento, and the Division Engineer, South Pacific.

The authorized Corps project, Humboldt River and Tributaries, Nevada, consisting of Hylton, Vista and Devils Gate Dams and Lakes, would be located in the vicinity of the Sierra Power Company's proposed project. We are presently conducting advance engineering and design studies for these dams and lakes to provide flood control, irrigation and recreation. The Vista and Devils Gate Lakes sites appear to be within the path of the Adobe Range and Metropolis Corridors; therefore, before the final route alignment is selected for the transmission line, consideration should be given to the possible future construction of these dams and lakes. In March 1976 we furnished your office a copy of our "Humboldt River and Tributaries, Nevada, Environmental Inventory and Sase Assessment", dated September 1975, showing the locations of the dams. A copy of a map showing the Humboldt River Basin and the proposed lakes is inclosed.

In addition, you should be aware that a Department of the Army permit may be required under Section 404 of the Federal Water Pollution Act Amendments of 1972 (Public Law 92-500) for activities involving disposal of dredged or fill material in waterways.

SPDPD-R  
Mr. E. I. Rowland

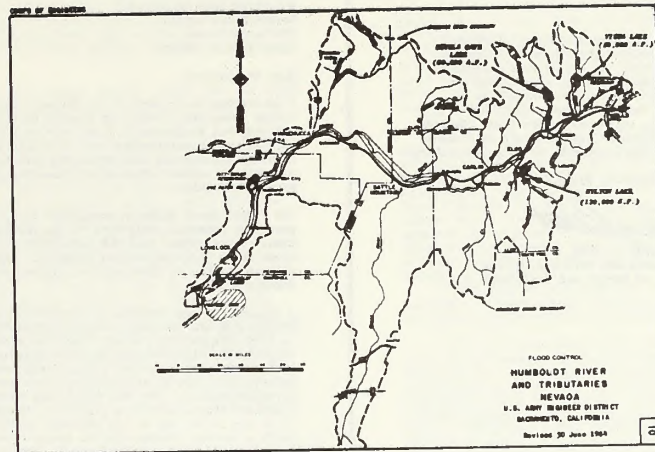
2 DEC 1976

Thank you for the opportunity to review and comment on this Draft Environmental Statement.

Sincerely yours,

*William E. Vandenberg*  
WILLIAM E. VANDENBERG  
Colonel, CE  
Deputy Division Engineer

1 Inclosure  
as stated



**Southern Pacific  
Land Company**

Southern Pacific Building • One Market Plaza • San Francisco, California 94105 • (415) 362-1212

015

W. F. 自然语言处理  
自然语言处理, 自然语言处理 - NATURAL LANGUAGE  
L. A. 自然语言处理  
自然语言处理, 自然语言处理, 自然语言处理 -  
NATURAL LANGUAGE  
N. V. 自然语言处理  
自然语言处理, 自然语言处理, 自然语言处理 -  
NATURAL LANGUAGE

December 1, 1976

State Director (N-911)  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Sir:

Please refer to the proposed construction by Sierra Pacific Power Company of a 230-345 KV transmission line between Oreana, Nevada, to Hunt, Idaho, and the draft Environmental Statement dated August 1976.

Southern Pacific Land Company has no objections to the route selected by Sierra Pacific Power Company.

As a matter of information, we have already granted to the power company easements over 47 parcels of our property.

Sincerely,

W. H. Maher

cc: Sierra Pacific Power Company  
P. O. Box 10100  
Reno, Nevada 89510  
Attn: Mr. George G. Assuras  
Right of Way Engineer

Mr. T. J. Longseth, District Supervisor  
Southern Pacific Land Company  
One East First Street, Suite 905  
Reno, Nevada 89501

3992.54

W. C. MCDULLOCH  
CHIEF NEOLOGIST

H. A. SMITH  
CHIEF AGRONOMIST

E. A. CUFF  
CHIEF FORESTER

T. J. LONGBETH  
DISTRICT SUPERVISOR

Advisory Council on  
Historic Preservation  
1522 K Street N.W.  
Washington, D.C. 20005

016

November 26, 1976

Mr. E. I. Rowland  
State Director  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

This is in response to your request of October 15, 1976 for comments on the draft environmental statement (DES) for the Sierra Pacific Power Company's proposed 230/345 kv transmission line from Orena, Nevada to Hunt, Idaho. The Advisory Council has reviewed the DES and notes that the proposed undertaking has affected and will continue to affect the historic and prehistoric resources and the archeological significance. Because the cultural properties may be eligible for inclusion in the National Register of Historic Places they are entitled to the protection afforded them by Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f, as amended, 90 Stat. 1320) and Executive Order 11593, "Protection and Enhancement of the Cultural Environment" issued May 13, 1971.

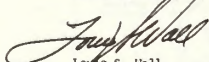
Therefore, in accordance with Section 106 and the Executive Order 11593 as implemented through the "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800), the Council requests the Bureau of Land Management (BLM) to request in writing an opinion from the Secretary of the Interior respecting these properties' eligibility for inclusion in the National Register and inform us of the findings. Furthermore, the BLM is reminded that should the Secretary of the Interior determine any of the properties are eligible for inclusion in the National Register, it must afford the Council an opportunity to comment on the significance of the affected cultural resources pursuant to Section 800.4(d) or (e) of the procedures prior to taking any action with respect to the proposed undertaking that will affect the cultural resources.



Page Two  
November 26, 1976  
Mr. E. I. Rowland  
Oreana-Bunt Cultural Resources

Until the requirements of Section 106, the Executive Order 11593 and the procedures are met, the Council considers the DES to be incomplete in its treatment of the cultural resources. To remedy this deficiency, the Council will provide substantive comments on the undertaking's effect on the cultural resources through the process detailed in the procedures. Please contact Michael H. Bureman of the Council staff at P. O. Box 25085, Denver, Colorado 80225, telephone number (303) 234-4946, to assist you in completion of this process as expeditiously as possible to avoid any unnecessary delays in the implementation of this undertaking.

Sincerely yours,



Louis S. Well  
Assistant Director, Office  
of Review and Compliance

December 7, 1976

Ed Rowland, State Director  
Bureau of Land Management  
Nevada State Office  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland,

I am writing in support of the Highway Corridor route for the Hunt to Oreana power line. Not only does it have the least adverse environmental effects, but it is also logical that it will be easier and less costly to maintain after construction due to its good access to highways and towns. Although shorter and less expensive initially, the other routes have moderate to serious adverse environmental impacts and probably will cost more to maintain.

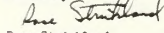
The O'Neil Basin route in particular is totally unacceptable as the route goes near potential additions to the Jarbidge, Nevada's only wilderness area. I understand that BLM must begin to study large tracts of roadless areas as to their wilderness potential. Approving this particular route without studying it first may be a violation of Section 603c of the BLM Organic Act.

I believe the main purpose of the EIS process is to establish which alternative has the most adverse environmental impacts and to eliminate it from consideration unless there are outstanding advantages to it and unresolvable disadvantages to other alternatives. Sierra Pacific's stated main reason for the O'Neil Basin route is the lesser cost, but I believe this view is shortsighted and a good example of their social irresponsibility. The only value they recognize is the monetary one. I believe they would run a power line through the Washington Monument if it was in the way of the shortest distance between the source and users of power. Sierra Pacific doesn't seem to comprehend the incalculable costs to Nevadans in terms of lost wild lands and primitive areas, costs which are not recoverable in any foreseeable future due to the fragile nature of our deserts and mountains.

We Nevadans and, I hope, BLM which holds so much of our land in trust, do not have to permit utility companies to abuse our lands as corridors for getting the power of Utah coal to California energy users. If the energy must be transmitted (which I also believe has not been definitely established), the utility companies should use existing corridors.

Thank you for considering my comments.

Sincerely,



Rose Strickland  
3273 Gypsum Road  
Reno, Nevada 89503



UNITED STATES  
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

NEVADA OPERATIONS OFFICE  
P. O. BOX 18106  
LAS VEGAS, NEVADA 89114

DEC 6 1976

Mr. E. I. Rowland  
State Director  
Bureau of Land Management  
Nevada State Office  
Room 3008 Federal Building  
300 Booth Street  
Reno, Nevada 89509

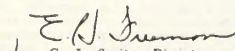
Dear Mr. Rowland:

DRAFT ENVIRONMENTAL STATEMENT, SIERRA PACIFIC POWER COMPANY 230-345 KV TRANSMISSION LINE, OREANA, NEVADA TO HUNT, IDAHO

In response to your letter dated October 15, 1976, requesting comments on the subject action, the Nevada Operations Office finds the document acceptable as written. We did notice that threatened and endangered wildlife species, while identified and briefly assessed, have not been identified and assessed as required by Federal Law (See Federal Register of July 1, 1975, pages 27823 - 27924). You might want to review that section.

We appreciate having had the opportunity to read your draft statement.

Sincerely,



C. J. Smits, Director  
Property Management Division

PMD:WET-168



SIERRA CLUB

Toiyabe Chapter - Nevada and Eastern California  
P.O. Box 8048 - University Station - Reno, Nevada 89507  
December 7, 1976

Ed Rowland, State Director  
Bureau of Land Management  
Nevada State Office  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

We would like to offer the following comments and observations on the Draft EIS for Sierra Pacific Power Company's proposed 230-345 KV Transmission line from Oreana, Nevada to Hunt, Idaho.

(P.6) The highway corridor "generally coincides with existing powerline rights-of-way." The other proposed routes either do not follow existing corridors at all, or follow them only when they come close to the highway corridor. The EIS should point out that there are already several lines of varying height and closeness to the highway and that this transmission line would be, in fact, only an additional line.

(PP.11,116,139) "The Power Company prefers using existing roads where these are available." It is obvious that the greatest number of miles of existing roads are along the highway. Further the quality of these roads is excellent compared to generally substandard roads to be found elsewhere in the region. Along the O'Neil route there are no paved roads. The quality of the gravel and dirt roads where they exist certainly can not be compared to a freeway or paved highway for moving men and equipment. (P.14) The need for materials storage yards at 30 to 50 mile intervals may not be so critical if excellent high speed transportation is available, but in any event, the "numerous trips" will be speeded near highways. The lodging for work crews will be best when access to cities and towns is available without long commuting times.

(P.15) Rehabilitation efforts required for roads not needed for "primary access" would be less along the highway route.

(P.18) "Many of the roads may be required not only for construction, but also for line operation and maintenance access." The highway corridor, in requiring the fewest miles of new roads, will also afford the best access for maintenance and operation of the line. "Where terrain is steep, access spurs and equipment pads will be necessary..." The proposed route crosses steep terrain (P.112) which has the more productive lands subject to severe erosion hazard (P.39).



(P.111) Stream crossings are of extreme interest to us since such crossings damage the wild or rural character of creeks and rivers flowing through undeveloped lands. While 22 stream crossings are noted for the highway corridor, two crossings of the Salmon Falls River and one on Thousand Springs Creek coincide with nearby highway and railroad crossings of these streams. This continues to be true throughout the length of the line along the highway corridor where it crosses the Humboldt River. Thus, the streams in question are crossed by an additional structure in an already disturbed area. However, an examination of the map (P.55) for the proposed route, reveals nine stream crossings are essentially in undeveloped rural or wilderness lands with no substantial mark of man's more modern demands--paved highways, railroads, power lines, gas stations, etc. Further, damage to streams is far more likely in steep terrain with easily eroded soils.

(P.113) The access by ORV's into remote lands due to road construction is a severe threat to soils, wildlife, and primitive values. This environmental effect would be least in the highway corridor. Again, we feel it must be pointed out that since land along the Humboldt River, the highway and railroad is generally of low interest value for off-road driving, there will be little continued demand for roads other than that required for maintenance. ORV use is further discouraged in this area due to the high incidence of private land. Soil disturbance will be substantially less than in the back country traversed by the O'Neil Basin Route. (P.114) We would also point out that 67% of the O'Neil route crosses soils rated as severe erosion hazard (Highway is the least with 31%). The proposed route requires the most new roads, the longest construction vehicle access times, as well as the greatest potential for massively increased ORV use following construction.

Also pertinent to the soils issue is the disturbance which is already in effect along the highway route. It is in this corridor that development has occurred and at times haphazard. Mitigating measures, such as helicopter implantment, could be used to minimize damage on sensitive sites. Yet, the O'Neil and Highway routes both cross such sensitive soils as found in salt flats. There is obviously no choice which can avoid these lands.

(P.119) The totals on vegetative disturbance seem clear that while the longest, the highway route disturbs the least.

(P.122) There does not seem to be any clear choices on routes due to impacts on deer or antelope. We would only point out, that along the highway, route the line is just one more of a multitude of disturbances to winter range habitat for deer. In all other respects, the highway corridor is as good, or better than the O'Neil Route.

(P.123) The highway corridor again seems the clear choice in reducing disturbance to wildlife habitat for sage grouse, chukar, quail, and pheasant. We agree that some problems for raptors do exist and that possible mitigating measures could be addressed in the EIS.

The O'Neil Basin Route's effect on wildlife due to in-

Even if the line could be justified as not too damaging (which it can not), we know there will be other lines in response to continued growth throughout Nevada and the west in population and therefore energy consumption. There is a critical need to begin to make the right environmental choices so that the effects of growth and expansion yet to come will not entirely use up the areas wilderness and rural beauty.

We must not view this as just a power line to bring cheaper power from Hunt, but instead as a new power corridor in a nation which is a veritable sea of power line corridors. We must act now to consolidate these corridors so that their cumulative effect is merely additive and not multiplicative. It is less disturbing to the eye to have 4 lines close together following roughly the same route than to discover a line crossing off in some new direction no matter where you look or travel--no matter how far you are from the maddening confusion.

This line represents a clear cross roads--consolidation of routes into existing corridors or flagrant dispersal of corridors with steel towers marching solemnly across the face of Nevada's remote lands.

(P.154) Fifteen ecological interrelationships are more adverse under the O'Neil route compared with the highway route. We disagree that the highway corridor would have greater visual impact as shown. It must continually be emphasized that the highway is already plagued by many "unnatural" structures. Further, the low profile of the land and careful routing in specific areas can reduce the impact since the land has mountain backdrops.

(P.179) The environmental advantages of the highway route are borne out in table V-1. It shows that in the Valmy to state line and state line to Hunt segment, the highway corridor would "reduce or eliminate" the greatest environmental impacts, i.e., impacts to wildlife, recreation, soils, etc.

There is no reason to assume it is healthy to "hide" the line from the public. It is unwise for people to think electricity is really "clean". It is unwise to think electricity is magically transported from point A to B. In fact, the transportation of electricity represents one of the most land intensive methods of transporting energy. It effects all other uses of the land and clouds the natural landscape. With consolidation along the highways, we minimize the areas which are damaged by transmission lines. To move the line away from the highway will not preserve the highway views, they are already blighted by power lines--smaller to be sure, but power lines none the less.

Consolidation near highways represents the logical routing both for the health of the environment and for the health of growing rural communities which will have increasing electrical needs.

In summary, The highway corridor is the best route. It certainly has the least effect on wild and primitive values. It avoids forested and mountainous areas. It provides the best access to cities and towns, highway and railroad transportation

created vehicular access is a very serious threat.

(P.130) The highway corridor will bring power closest to all potential users. We are unsure as to the exact nature of the future "taps" mentioned; however, it would seem that to align the corridor with areas of power consumers is a wise one not to be overlooked. The EIS expresses a desire on the part of the smaller rural electric companies for alignment near existing power lines.

(P.141) We concur with this and with the recommended consolidation of power lines along existing routes as proposed in a letter from the Nevada State Clearing House. It is important to talk of future lines and the need for establishing realistically maintainable corridors capable of expansion in future years. We may well experience a demand even from California for power to be transported across Nevada like the line from the Northwest to Los Angeles through western Nevada.

(P.78) We are deeply concerned about the lands which have obvious primitive values along the O'Neil Basin Route. This mountain and stream land still retains its primitive character. The BLM is now required to study primitive lands for possible Wilderness classification. The construction of the transmission line through the O'Neil Basin will commit to industrial use lands which could well be protected as wilderness. The reasons in support of the route due to cost and construction time are irrelevant when compared to the loss of potential primitive areas which continue to shrink in an increasingly urbanized world.

This reason alone seems sufficient for denial of the request. These areas must be studied for suitability prior to this irretrievable commitment of primitive land.

(P.141) The added cost per customer is quite interesting even if we assume that the highway route is more expensive despite its nearness to transportation facilities of exceptional quality for both construction and maintenance over its fifty year life span. The cost of ever expanding electrical demand is the real cost, as always--not the route location. Only \$5. (16%) difference per customer per year is indeed a small price to pay to preserve the wild lands of Nevada from this unsightly and damaging structure. Considering the highway route is nearly 30% longer than the proposed route, the cost per mile is shown to be substantially less. This will be reflected in maintenance cost and when it comes time to upgrade the line and connect to rural communities.

If the cost of the new Valmy Power Plant were added into this equation, the cost of the line, regardless of the transmission route, will appear miniscule.

In every aspect of our lives, sacrificing the environment rarely "pays". Here the short term cost of the line must be weighed carefully against the long term commitment of primitive and backcountry lands to industrial use. This is an environmental cost which far exceeds the dollar cost at issue here.

during construction and later for maintenance. It requires the least amount of new road construction. It does not open up lands with limited access to off-road vehicle use. It will provide the greatest benefit to the local economies in tax revenue. It coincides with existing power line rights-of-way. It is closest to communities which are very likely to need the power it will provide. It will have the least real visual impact for reasons stated above.

Thank you for this opportunity to comment.

Sincerely,  
*Dennis Chigildi*  
 Dennis Chigildi  
 Conservation Chairman  
 Toiyabe Chapter



December 9, 1976

State Director (N911)  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Subject: Proposed Utility Corridors Adjacent to Elko Airport,  
Elko, Nevada.

Dear Sir:

Our firm has been retained by the City and County of Elko, Nevada, to prepare the Environmental Impact Assessment Report for the proposed expansion of J.C. Harris Field (the Elko Airport) at Elko, Nevada.

It has come to our attention that your office has recently drafted an environmental statement for several alternate routes for a proposed 230/345 KV transmission line from Oreana, Nevada, to Hunt, Idaho. Two of the proposed routes, the "Metropolis" and the "Highway", pass sufficiently close to the Elko Airport to be considered to have a potential affect on the navigable airspace in the vicinity of the airport, as designated in Part 77 of the Federal Aviation Regulations. The section of Part 77 which is applicable to the proposed transmission lines has been attached for your review, in case you have not already considered the potential for conflict with air navigation in the area.

We also wish to advise you that our draft Environmental Impact Assessment Report for the proposed airport expansion will note the two proposed routes as potential hazards to air navigation in the area, subject to final determination by the Federal Aviation Administration.

Any questions you may have regarding procedures required by the FAA should be directed to:

Mr. Leroy Brown  
FRA Western Regional Office  
P.O. Box 92007  
World Way Postal Center  
Los Angeles, California 90009  
Telephone (213) 536-6186

If you have any questions or comments regarding specific areas of potential conflict, we will be very happy to discuss them with you at your convenience.

Yours truly,

*L M Prater*  
Lawrence M. Prater, P.E.  
Senior Project Engineer

P. Farrell to Mr. Ed Rowland, p. 2

Phillip Farrell  
P.O. Box 1229  
Berkeley, CA 94701  
December 4, 1976

Ed Rowland, State Director  
Bureau of Land Management  
Nevada State Office  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland,

I am a resident of California who has had a long-time interest in management of federal lands in Nevada. I am a frequent visitor to the state for recreation. I am very much concerned about the maintenance of high quality natural environments on these lands.

It is thus with dismay that I have learned that you are proposing to issue permits for a right-of-way for a new high voltage electric transmission line to the Sierra Pacific Power Company along the so-called "O'Neil Basin" route.

The "O'Neil Basin" route, while perhaps economically most attractive in terms of construction costs because of its short length, would be the most environmentally devastating route for this power line.

This power line as proposed would cross wild and natural lands and thus largely destroy their undeveloped character. New road construction would bring in increased numbers of recreationists, including also increased ORV use. The Bureau of Land Management and Forest Service are ill-equipped even at present to handle the impacts of recreational use in these remote lands - this new access would provide even greater impact.

I understand that the proposed power line would pass close to the Jarbidge Wilderness Area. This Wilderness area, Nevada's only classified Wilderness so far, gains much of its wildness and attractiveness from its remote location. I have climbed the high peaks in this Wilderness and have been impressed with the unbroken vistas of wild nature which extend for tens or hundreds of miles. The view of a large power line crossing the horizon instead is not very appealing.

An alternative route for this power line exists along Highways 93 and Interstate 80. According to the draft EIS on the power line proposal, this "Highway Corridor", because of its greater length, would increase construction costs by 16%. But in return there would be significant benefits over the "O'Neil Basin" route.

P. Farrell to Mr. Ed Rowland, p. 3

These benefits include:

- (1) No additional impact on wild and undeveloped areas.
- (2) Best access for construction and future maintenance.
- (3) Closest to existing communities which may very likely need the additional power which will be brought into the state.
- (4) Least visual impact, since the Highway Corridor already contains numerous transmission and transportation facilities.
- (5) Greater equity in distribution of economic and environmental costs of the power. The majority of users of this new power will be those who would pay the economic and environmental (e.g., visual impact, etc.) costs of the new power with the Highway Corridor route. With the O'Neil Basin route, large environmental costs are shifted to the small minority of users who reside in or visit the undeveloped areas through which it would pass.
- (6) Least increased recreational use impact on undeveloped lands because of least new road construction.

I believe that these benefits of the Highway Corridor route outweigh its increased construction costs. The National Environmental Policy Act (42 USC Sec. 4321 et al) clearly requires that environmental amenities be given consideration in decision-making on federal projects along with economic and technical considerations (Sec. 102(B)).

I thus urge you to reject the O'Neil Route for this proposed power line and adopt instead the Highway Corridor alternative.

I must also point out that the proposed O'Neil route is probably illegal under the new Federal Land Policy and Management Act of 1976, signed by the President on October 21, 1976. Two provisions of this law lead me to this conclusion: Sec. 503, relating to right-of-way corridors, and Sec. 603, relating to wilderness studies.

Section 503 of the new Federal Land Management and Policy Act states:

"In order to minimize adverse environmental impacts and the proliferation of separate rights-of-way, the utilization of rights-of-way in common shall be required to the extent practical. . . ." (emphasis mine)

There are already numerous transmission and transportation rights-of-way along the Highway Corridor. Use of this corridor for the proposed Sierra Pacific power line is certainly practical. Cost is not unreasonable, and additional non-monetary benefits are gained. It thus seems clear to me that the intent of the

law will not be fulfilled if a totally new right-of-way, the O'Neil Basin route, is selected for this proposed power line when common use of the Highway Corridor route with other transmission and transportation facilities is practical.

Section 603 of the Federal Land Management and Policy Act sets up a program of wilderness reviews for roadless areas on the public domain lands managed by the Bureau of Land Management. Subsection (a) provides in part that:

"Within fifteen years after the date of approval of this Act, the Secretary shall review those roadless areas of five thousand acres or more and roadless islands of the public lands, identified during the inventory required by section 201(a) of this Act as having wilderness characteristics described in the Wilderness Act of September 3, 1964, and shall from time to time report . . . as to the suitability or unsuitability of each such area or island for preservation as wilderness."

Further, subsection (c) provides in part that:

"During the period of review of such areas and until Congress has determined otherwise, the Secretary shall continue to manage such lands according to his authority under this Act and other applicable law in a manner so as not to impair the suitability of such areas for preservation as wilderness. . . ."

The intent of this section is thus clear. The Secretary of the Interior (through the Bureau of Land Management) is to inventory all roadless areas on the public lands and must maintain the suitability of these areas for preservation as wilderness indefinitely or until Congress specifically directs otherwise.

Because the O'Neil Basin route passes through undeveloped federal lands, it seems to me that it would probably cross many roadless areas, thus rendering them unsuitable for preservation as wilderness in direct violation of the Federal Land Management and Policy Act. Because the Secretary of the Interior (through the Bureau of Land Management) has a responsibility to maintain an ongoing inventory program to identify roadless areas on the public lands, concentrating first on areas of critical environmental concern such as this proposed power line route (see Sec. 201(e) of the Act), no route, such as the O'Neil Basin route, which may adversely affect roadless areas can be adopted until an inventory of lands along the route shows that it will not cross any roadless areas.



P. Parrsall to Mr. Ed Rowland, p. 4

021

In view of these provisions of the new Federal Land Management and Policy Act just described which cast doubt on the legality of the proposed O'Neil Basin route for the proposed Sierra Pacific power line, and in view of the advantages for environmental quality and community benefit which the Highway Corridor route possesses, I strongly urge you to reject the O'Neil Basin route for this power line, and adopt the Highway Corridor route instead.

Sincerely yours,

*Phil Farrell*

cc. Toiyabe Chapter, Sierra Club  
Secretary of the Interior

UNION PACIFIC RAILROAD COMPANY

LAW DEPARTMENT

1416 DOODGE STREET

OMAHA, NEBR 68179



C. BARRY SCHAEFER  
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WILLIAM P. NICHOLS  
General Commercial Counsel  
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R. F. NIERHAUSE  
VINCENT F. POWERS  
Asst. General Attorneys  
PETER W. HODENHAUS  
MARGARET R. LEVIN  
Attorneys

December 6, 1976

State Director (N-911)  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Sir:

I have reviewed the draft environmental statement pertaining to the Sierra Pacific Power Company's proposed 230/345 kilovolt transmission line from Orona, Nevada, to Hunt, Idaho, and wish to comment concerning this proposed action.

Included within Section III: Environmental Impacts of the Proposed Action, in the section on page 128 entitled "Transportation", the bald statement is made that "railroad communications may be disrupted". No explanation is given as to how serious the impact of this disruption might be, or steps which are planned to alleviate it. I feel that fuller consideration should be given to this question.

Yours very truly,

*Valerie W. Scott*

(Mrs.) Valerie W. Scott  
(402) 271-4398

December 7, 1976

023

Bureau of Land Management  
300 Booth Street  
Reno, NV 89509

Gentlemen:

Subject: O'Neil Basin Corridor

The Washoe County Game Management Board would like to go on record as being strongly opposed to one O'Neil Basin Corridor proposed by the Sierra Pacific Power Company.

This board has always been of the firm opinion that the destruction of our wildlife range will lead to the continued decline of our wildlife and habitat. A fine example of this is the transmission line, located in Northern Washoe County, run through by the City of Los Angeles. The line traversed some of Nevada's best upland and big game habitat. The result of this being many access roads now accessible to the Sunday driver and therefore the constant harassment to an area previously unspoiled.

What has it done for the people of Nevada? Nothing but destroy nature.

It is time to plan for the future and therefore weigh the long range consequences of this project. The board realizes that the use of an existing corridor may result in a higher initial cost, but would like to point out that once watershed and rangeland are destroyed it is virtually impossible to return it to a natural state.

How can you put a dollar value on that and, further, how can you deny future generations the opportunity of enjoying nature?

Therefore, by unanimous decision, the Washoe County Game Management Board strongly recommends the use of existing highway corridors for the proposed installation.

Sincerely,

WASHOE COUNTY GAME MANAGEMENT BOARD

*Mike Moore*  
Chairman

*Stephen J. Morgan*  
Member

*David M. Davis*  
Member

NEVADA MINING ASSOCIATION, INC.

SUITE 602 • ONE EAST FIRST STREET  
RENO, NEVADA 89505

PAUL O'BRIEN  
EXECUTIVE SECRETARY  
POST OFFICE BOX 3490  
TELEPHONE 322-8675

December 9, 1976

Mr. Ed Rowland, State Director  
United States Department of the Interior  
Bureau of Land Management  
300 Booth Street, Room 3008  
Federal Building  
Reno, Nevada 89509

Dear Mr. Rowland:

Subject: Comments on Draft Environmental Statement  
Power Line between Valmy, Nevada, and Hunt, Idaho

I attended the public hearing covering alternate power line routing held on November 16, 1976 at the Pioneer Inn, Reno, Nevada.

This statement is prepared on the above subject on behalf of Nevada Mining Association, Inc., a trade association representing mine operators and others interested in mining in Nevada.

In our opinion, the O'Neil Basin Corridor is the most preferable routing because it would further potential mineral production in a large portion of northeastern Nevada. Such policy is in conformity with Public Law 91-631, 91st Congress S.719, known as the Mining and Minerals Policy Act of 1970.

In Nevada, mine-mill loads that have initially justified and made economic the construction of high capacity electric service facilities now form the basis of expanded economic activity in the areas so served. Indeed, it would be difficult to justify any of the alternate routes with the stated \$10-million added cost unless one were to assume that all of Nevada's remote areas are to be marked for non-development - a policy that would not only be in direct conflict with the above cited Public Law 91-631, but would also be in direct opposition to the Public Land Law Review Commission study and recommendations that public lands be retained and managed under a multiple use policy.

We want to emphasize that power is presently available in and adjacent to the highway and the Humboldt River, but the O'Neil route has the potential of serving mining and milling loads in a portion of Nevada that will surely, over the long term, account for mineral producers that will require substantial blocks of electric power.

Upon inquiry, we found that the 230,000 volt power line could be

022

024

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Mr. Ed Rowland

-2-

December 9, 1976

tapped for approximately \$1-million and that such cost would be justifiable to gain a reliable 1500 kilowatt power load.

We urge that the O'Neil Basin Corridor be chosen for another important reason. Being the shortest and least expensive route, the net result of its choice will be less expensive power for Nevada. Recognizing the present crisis in power costs caused by skyrocketing fuel costs, it is essential that this aspect become a dominant factor in the basis for judgment.

A careful review of the O'Neil Basin Corridor reveals that it is wisely chosen from an environmental standpoint. It generally coincides with the road system already established. It does not penetrate any area recognized for its wilderness value and does not impose itself on any singularly unique or scenic areas.

Accordingly, we fail to find any reason to choose other than the shortest route which will result in the greatest good for the future of Nevada.

Very truly yours,

Paul Gemmill

PG:v

## NATIONAL PUBLIC LANDS TASK FORCE

NEVADA OUTDOOR RECREATION ASSOCIATION, INC.

025

## HONORARY LIFE MEMBERS

Charles S. Watson, Jr.  
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Alvin McLane  
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Anthony D. Rosso  
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Sonia De Hart  
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B. Riley McClelland  
Missoula, Montana  
Rex and Muriel Lund  
Unionville, Nevada  
IN MEMORIAM  
George Kell  
Sparks, Nevada  
George Lund  
Unionville, Nevada  
Charles Rago  
Sparks, Nevada  
James G. Hulme, Sr.  
Plocha, Nevada

P. B. Box 1245  
Carson City, Nevada 89701  
December 8, 1976

Mr. E. I. Rowland, State Director  
Bureau of Land Management  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement for the O'Neil Basin, Nevada, to Hunt, Idaho, transmission line as proposed by the Sierra Pacific Power Company. Our remarks will not address the issue of whether the power line should be built or not but will concern itself solely with the route to be selected.

According to the Draft EIS the route preferred by the power company is the O'Neil Basin route; whereas we believe that any of the three alternatives would be far better from an environmental point of view. Our first choice would be the Highway Route, followed by the Metropolitan Route and the Adobe Route. This choice is based partly on the statement in the draft EIS (Pg. 167) that the presence of the transmission line along the O'Neil Basin route will have a highly adverse impact for the recreationist and back-country user; while the impact would be only moderately adverse for the Adobe and Metropolitan Corridors, and only slightly adverse in the Highway Corridor. "The O'Neil Basin Corridor has higher scenic qualities than the other corridors, so the presence of a transmission line and associated soil and vegetative scars would be a greater intrusion and cause more scenic quality impairment." Other factors which must be taken into consideration are the amount of land disturbance (770 acres for the O'Neil Basin route and 470 acres for the Highway Route), the greater slope involved in the O'Neil Basin Route, the necessity for building new access roads into the O'Neil Basin route, and the effects on wildlife and vegetation.

One of the advantages of the Highway corridor would be that it generally coincides "with existing powerline rights-of-way." (Pg. 6). It is our belief that all utility lines should be confined as much as possible to single corridors. We do not wish to see Nevada covered with a network of transmission lines carrying power from one state to another.

## NATIONAL PUBLIC LANDS TASK FORCE

NEVADA OUTDOOR RECREATION ASSOCIATION, INC.

025

## HONORARY LIFE MEMBERS

Charles S. Watson, Jr.  
Carson City, Nevada  
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Sparks, Nevada  
James G. Hulme, Sr.  
Plocha, Nevada

Mr. E. I. Rowland  
12/8/76. Page 2.

Since the Highway Corridor is already developed and used for a multitude of non-scenic purposes, the presence of transmission lines would not detract from the location.

We also question the seeming selection of the O'Neil Basin route before the draft EIS was even completed. For example, only the O'Neil Basin route was actually surveyed by an archeological team; the other routes were merely sampled. No survey has been made of the plants along the four routes nor of the non-game species of animals. A study has not been made of the primitive values of the four routes nor of the roadless areas more than 5000 acres as required in the BLM Organic Act of 1976.

The O'Neil Basin route seems to have been selected solely on the basis that it would be shorter and therefore less expensive to build. However, no statistics are given as to the projected cost of servicing the four alternatives. It may be that the O'Neil Basin route could prove to be the most costly over a 20 year period and the Highway Route the least costly. Certainly this aspect should be examined.

We ask therefore that the three alternatives to the O'Neil Basin route be considered and studied carefully and that additional studies be made of archeological values, roadless areas, plant and animal species, and scenic values before any final choice is made of routes and the Final Environmental Impact Statement is issued.

Please keep us informed as to further developments on this important issue.

Sincerely,

NEVADA OUTDOOR RECREATION ASSN

by *Marjorie Sill*  
Marjorie Sill, Acting Secretary

December 7, 1976

026

3340 Berthoud  
Reno, NV. 89503

Mr. Ed Rowland, State Director  
Bureau of Land Management  
Nevada State Office  
300 Booth St.  
Reno, NV. 89509

Dear Mr. Rowland:

Subject: Sierra Pacific Power's Proposed Line Route Across Northern Nevada

Of the several routes studied for the proposed power line across Nevada the one following Highway 93 appears to be the most acceptable.

Although it is the most expensive, the public interest is best serviced by BLM's setting up established public corridor routings throughout the state. Because Nevada is a bridge state and likely to be the proposed route for other products agreed upon corridors would have the following advantages:

- reduce the number of roads which cause erosion, reduce wildlife habitat, require maintenance
- limit the amount of management and protective surveillance needed against vandalism, car problems by unthinking visitors, litter
- leave that much more land available for other options
- minimize EIS costs because information would already have been gathered
- minimize servicing costs

It is, of course, understandable that Sierra Pacific Power with only responsibilities for supplying power to the public would desire the least expensive route. But the Bureau of Land Management with broader mandates and longterm requirements of the country should consider not only immediate costs, but longterm costs and other project needs.

Sincerely,

*Tina Nappe*  
Tina Nappe



P.O. Box 951  
EIKO, Nevada 89401  
Dec 8, 1976

Dear Mr. Rowland:

027

I would like to take this opportunity to encourage you + the BLM to select the Highway Corridor for the Sierra Pacific Power Company's power line route.

I am strictly opposed to a route through the O'Neil Basin. This would have adverse impact on wild lands adjacent to the Jarbridge Wilderness, itself. Some of these wildlands, themselves, may be candidates for BLM wilderness study at a later date. A service road along a power line corridor in these areas would lead to increased off-road vehicle use + disturb mule deer and antelope herds in the area.

The Highway Corridor would provide local economies with tax revenues + would be closest to communities which need the power. This route keeps visual impact confined to areas already lined with power poles.

Thank you, Brent T. Kien, MD.



DAN S. LEETH

wilderness

backpacking

photography

P.O. Box 372  
Steamboat, Nevada 89436  
December 9, 1976

Mr. Ed Rowland, State Director  
Bureau of Land Management  
300 Booth Street  
Reno, Nevada 89509

Re: Sierra Pacific Power Company  
Hunt to Oreana Powerline

Dear Mr. Rowland:

Nevada has one precious resource lacking in almost every other state--open space. From so many spots in our state, one can stand, look in every direction and see nothing but the works of God. Now, the Sierra Pacific Power Company wants to destroy that experience in a section of Northern Nevada.

I think that there is serious question as to the need for any powerlines to cross Nevada. This is especially true of the proposed Hunt, Idaho, to Oreana line. More and more, the people of our nation are being forced to pay the cost as the power companies spread their greedy tentacles across the face of the earth. It is time that we stop blindly allowing them their every wish. I urge you to take a very long look at the need for the proposed transmission line.

If the line must be built, the Sierra Pacific preferred O'Neil Basin route is definitely not the route to allow. There is absolutely no need to puncture some more of Nevada's open lands with a new powerline. There already exists a good alternative route--the existing highway corridor. The route is slightly longer and more costly measured in dollars, but it requires far fewer new roads and has far less impact on the environment. Thus, the environmental cost is far less. Besides, as one gentleman pointed out, if the new line is next to I-80 the folks of Reno can see what they are paying for.

Section 603(c) of the new Bureau of Land Management Organic Act would seem to restrict your authority to approve the Sierra Pacific route. I have not yet had an opportunity to study the route in exact detail, but I would be very surprised if their preferred route did not traverse a potential wilderness section as defined in the act.

DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

029

WESTERN REGION  
P. O. BOX 32027, WORLDWAY POSTAL CENTER  
LOS ANGELES, CALIFORNIA 90032



-2-

028

The main argument used by the ego inflated executives of Sierra Pacific Power is monetary. They argue that the O'Neil Basin route is less costly for them to build. They do not consider the costs involved in delay. If the O'Neil route is approved, there will almost certainly be a court battle based on the Organic Act. Thus, it may actually prove to be less expensive for the power company to build along the highways.

I urge the Bureau to not approve the O'Neil Basin route for the Hunt to Oreana transmission line. I hope that no route is approved at all. If a route must be approved, I urge you to approve only a route that very closely parallels the existing paved highways.

Sincerely,

Dan S. Leeth

Please make my comments part of the official record of the public hearing on the Draft Environmental Impact Statement.

Mr. E. I. Rowland  
State Director (N-911)  
Bureau of Land Management  
Room 3000, Federal Building  
Reno, Nevada 89509

Dear Mr. Rowland:

As requested, we have now completed the review of your draft Environmental Impact Statement for the proposed project involving Sierra Pacific Power Company, 230-345KV Transmission Line, Oreana, Nevada to Hunt, Idaho.

Our findings indicate that this proposed project will not present any problem from an environmental viewpoint to any existing or presently planned FAA facilities. Please be advised that this approval does not obviate the requirement for the Sierra Pacific Power Company to file a note with the FAA where applicable and as stipulated under Part 77 of the Federal Aviation Regulations.

We appreciate the courtesy extended in bringing this matter to our attention.

Sincerely,

Royal W. Mink  
W. BRUCE CHAMBERS  
Regional Planning Officer



IDAHO STATE HISTORICAL SOCIETY  
610 NORTH JULIA DAVIS DRIVE BOISE, IDAHO 83706  
December 7, 1976



030

STATE MUSEUM

State Director (N-911)  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Sir:

Thank you for the opportunity to review the draft Environmental Statement for the Sierra Pacific Power Company's proposed 230-345 KV transmission line from Oreana, Nevada to Hunt, Idaho. My comments concern the identification and protection of archaeological sites along the route of the transmission line in Idaho.

As stated in the EIS (p. 98), the proposed routes for the transmission line in Idaho have not been adequately inspected for the presence of archaeological and historical properties. In 1975 Prof. B. Robert Butler of the Idaho State University Museum did conduct a survey of various portions of the route that cross BLM lands in southern Idaho. A new route has been proposed since Butler's work, but this new route has not been surveyed.

Also, an inspection of the transmission line route where it crosses private land in Idaho has not been conducted. The assessment of the archaeological and historical properties on private land is clearly required (36 CFR 800.3c2) in a project of this nature before the project can proceed.

We do agree with the recommendations of the Nevada archaeological survey for the mitigation of impacts to archaeological properties along the route (pp. 166-168).

If we can provide assistance for the completion of the inventory assessment please contact us.

Sincerely,

*Thomas J. Green*

Thomas J. Green  
Acting State Archaeologist  
State Historic Preservation Office

gt



NEVADA WILDLIFE FEDERATION, INC.

An Affiliate of the National Wildlife Federation  
P. O. BOX 49 / (702) 329-3443 / SPARKS, NEVADA 89431

031

December 6, 1976

Bureau of Land Management  
300 Booth Street  
Reno, Nevada 89502

Re: Oreana, Nevada to Hunt, Idaho - 230/345 KV Transmission Line Proposal

Gentlemen:

This letter is written in support of the position of the Washoe County Game Management Board in its position in relation to the routing of the above-referenced facility.

The Nevada Wildlife Federation concurs with the basic premise of the Washoe County Game Management Board, which is to the effect that the Northernly O'Neil Basin Corridor Route for the transmission line is destructive of environmental values, and can prove to be excessively expensive both from the standpoint of initial cost and/or maintenance. We consider that following established transmission line routings, and in particular, the "Highway Corridor", is the only logical route which can be successfully argued as in consideration of the natural resource of the State.

We are formally requesting that the position of the Nevada Wildlife Federation be considered in granting the right-of-way for transmission line in question.

A copy of the position of the Washoe County Game Management Board is attached hereto.

Very truly yours,

*Hewitt C. Wells*

HEWITT C. WELLS, President  
Nevada Wildlife Federation

HCW:jj  
Enclosure  
cc: Mr. Mike Toone

CONSERVE OUR NATURAL RESOURCES

# Sierra Pacific Power Company

032

JOE L. GREMBAN  
President

E. I. Rowland, State Director (N-911)  
Nevada State Office  
Bureau of Land Management  
Room 3008 Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

This replies to your request for comments on the Bureau of Land Management Draft Environmental Statement for the Orena, Nevada to Hunt, Idaho 230-345KV transmission line. Our comments are summarized and detailed and are explained in the attachments.

Comments are identified by Section and Page of the DEIS and by the letter designation assigned to the attachment to this letter.

(A) We have serious concerns about several sections of your DEIS. Incomplete and inaccurate statements must be corrected to allow full understanding and accurate evaluation of the proposed action. Briefly the primary "overall" areas of concern involve:

- 1) Environmental work and considerations undertaken before the filing of our application -- considerable cost and manhours were expended by numerous Federal, State and local governmental bodies, as well as by SPPC and their consultants. Numerous highly qualified and concerned individuals contributed to efforts in this area.

This effort to realistically and thoroughly evaluate all environmental concerns received very little consideration in the DEIS.

Although the Environmental Analysis Report dated April 1975 as prepared by SEA Engineers/Planners has previously been filed with the BLM and other agencies, a copy is enclosed to illustrate the depth and

P. O. BOX 10100 / RENO, NEVADA 89510 / TELEPHONE 702/789-4276



scope of the environmental analysis that was undertaken to determine the preferred route and it is requested that it be incorporated in the review process.

- 2) Evaluation and assessment of land requirements and potential impacts - Several inconsistencies and inaccurate assessments have been found. This is probably due to unfamiliarity with construction needs, or is simply the judgement of one individual. Our concern and request is that a full consideration is given to all opinions and facts bearing on this portion of the report.
- 3) Evaluation and conclusions derived from the economic analysis. Serious shortcomings are contained in the "broad-brush" approach used in the report's analysis of project costs. Discussion between your staff and our engineers should have been undertaken to insure a full understanding of utility costs and their use in arriving at accurate conclusions.
- 4) Evaluations and conclusions presented regarding construction techniques and impacts. Again, discussions between those assessing this area and our personnel responsible and knowledgeable in construction equipment and methods are necessary if an accurate evaluation is to be made.

SINCERELY,

*Joe L. Gremban*

JDE L. GREMBAN  
PRESIDENT

032

032

Attachment to Sierra Pacific Power Company letter to E.I. Rowland  
State Director  
Bureau of Land Management

Re: Bureau of Land Management Draft Environmental Statement, "SPPCo.  
230/345KV Transmission Line; Orena, Nevada to Hunt, Idaho".

This attachment contains Sierra's comments on the subject statement. The following is an index and summary of the detailed comments contained in Attachments A thru T.

SECTION I, Page 16 - Preliminary Right of Way Studies (Attachment A)  
This comment points out the extent of environmental studies of alternate transmission line corridors that were made by Sierra Pacific Power Company and consultants, SEA Engineers/Planners during 1973 and 1974. These studies involved input from government agencies and the public and the report was given wide distribution. This work was apparently not acknowledged or used in the DEIS. The significance is that the preferred transmission line location was chosen only after a thorough analysis of alternatives and through extensive involvement of BLM personnel, the public and other agencies and organizations.

SECTION I, Page 12 - Table 1-1 (Attachment B)  
Summary of Land Requirements and Surface Disturbance  
This comment points out an inconsistency in the DEIS between the Soil Erosion Map Page 41 and the Erosion Hazard Map Page 43 and discussions in the text which led to impact conclusions in Section III.

SECTION II, Page 69 (Attachment D)  
Description of the Environment  
This comment points out that the relationship of the proposed Rock Creek Reservoir and the O'Neil Corridor is not correctly represented on the Recreation Management Map.

SECTION II, Page 90 (Attachment E)  
Description of the Environment, Attitudes and Expectations  
The comment pertains to the last paragraph on the page which refers to attitudes of the public citizenry and suggests that no attempt was made to obtain "local" public input concerning the three routes which were added in the DEIS.

SECTION III, Page 113 through 116 (Attachment F)  
Environmental Impacts of the Proposed Action, Soils and Watershed  
This is a comment dealing with soil disturbance by the proposed project and points out a defect in the DEIS wherein approximately 177 miles of 20 foot wide new access road is projected. The factual data in the comment and accompanying maps show that such a road construction and soil disturbance will not be required and this will have a far reaching effect on other aspects of the DEIS.

SECTION III, Page 110 (Attachment G)  
Particulate Matter

This comment sets forth an inconsistency in the test of the DEIS relative to the production of particulate matter through power line construction as compared to statements in other sections of the report that say that the largest source of particulate pollution over most of the area is dust storms.

SECTION III, Page 111 (Attachment H)  
Environmental Impacts of the Proposed Action - Water  
Of the 21 live streams crossed by the "O'Neil Corridor" twelve (12) have existing bridges or culverts in the immediate vicinity of the transmission line crossing - there has been no such analysis made on the other three suggested alternate routes by the DEIS.

SECTION III, Page 112, 113 (Attachment I)  
Environmental Impacts of the Proposed Action - Topography  
The DEIS fails to define or identify "steep areas" and this comment presents an analysis which shows the percentage of the total length having slopes in excess of 20%.

SECTION III, Page 116 (Attachment J)  
Environmental Impacts of the Proposed Action - Vegetative Disturbances  
The comment explains that the graph Figure III-I does not reflect the most probable use of land for supply points and is misleading.

SECTION III  
Environmental Impacts of the Proposed Action

Page 119 (Attachment K) Vegetative Disturbance  
Page 124 (Attachment L) Land Uses and Ownership  
Comments on these sections express differences in opinion on the amount of impact in these categories and also the necessity to weigh the impact of a transmission line more heavily on lands that are intensively developed or have that potential.

SECTION III, Page 128 (Attachment M) Livestock Grazing  
This comment places a lower grazing reduction per corridor due to less area of disturbance than that developed in the DEIS.

SECTION III, Page 131 (Attachment N) Utilities  
The comments on these sections of the DEIS are statements that (1) express concern regarding implementation of the mitigating measures; (2) explain the use of helicopter construction and the use of access roads and (3) explain that conversion of the transmission line voltage from 230KV to 345KV will not require additional construction activities.

The opportunity to review and comment on the Draft Environmental Impact Statement is appreciated.

The comments submitted are the result of review by several departments within Sierra Pacific and by its consultants. It is requested that full consideration of the comments be given in the preparation of the final statement.



## SECTION III, Page 136 (Attachment O) Economic &amp; Social Characteristics

## Page 141-142 (Attachment P) Corridor Construction Costs

This comment is an explanation and revision of the DEIS analysis of construction costs associated with this project. It also expresses the additional costs involved if the transmission line is located on other than the O'Neil Basin Corridor. It is believed that the economics of the project should be treated more fully in the final impact statement.

SECTION III, Page 141 (Attachment Q) Attitudes & Expectations  
The comment suggests correcting the statement regarding the defeat of the Reno-Sparks sewer bond issue since it has since been approved.

Another comment pertaining to Page 136 described the position of Sierra Pacific Power Company regarding the water service area and points out that the company can neither inhibit or facilitate growth, but is obligated to serve the public with water in the specified area which is not fully developed.

SECTION III, Page 159 (Attachment R) Summary of Major Impacts  
The comment suggests the elimination of the need for twenty foot wide primary access roads, requires a correction of Table III-10 and further the tabulation does not recognize that the Highway, Adobe and Metropolis Corridors traverse lands of higher development potential due to proximity to services.

## SECTION V, Page 175 (Attachment T) Unavoidable Adverse Impacts, Soils &amp; Watershed

This comment expresses the concern that Table V-1 should reflect the elimination of the need for new access roads is the basis of the comment.

## SECTION V, Page 179 (Attachment U) Comparative Impacts

This comment expresses the concern that Table V-1 should reflect the level of impact reduction through use of low, medium, high gradations for each segment of each corridor and presents a suggested tabulation which is believed less confusing.

## SECTION IV, Pages 161-168 (Attachment S) Mitigating Measures

## SECTION VIII, Page 190 (Attachment V) Alternatives to Proposed Action

## ATTACHMENT A

## PRE-PLANNING - COMMENTS

## SECTION I, Page 16 PRELIMINARY STUDIES

The draft EIS should describe in more detail the extensive environmental and economic route selection studies made by both Sierra Pacific Power and Idaho Power, and their consulting representatives prior to the January 31, 1975 application date.

## PRELIMINARY ENVIRONMENTAL PLANNING

During the period April through September 1973, S E & A Consulting Engineers/Planners, at the request of Sierra Pacific Power Company, completed an environmental inventory known as a Constraint Study. The Constraint process provides a method by which alternatives to proposed action can be studied and evaluated. The process involves recognizing forces and reactions to these forced in regard to a proposed particular use. In order to identify environmental conditions which could constrain or restrain a proposed action, the study takes into account both short and long range aspects of the action.

Input relating to the development of the environmental inventories was obtained from various Federal, State and local agencies between April and September 1973 for the Nevada study, and between July and September 1974 for the Idaho study.

The agencies contacted were:

## Federal

## Department of Agriculture

## Forest Service

Humboldt National Forest  
Sawtooth National Forest  
Soil Conservation Service

## Department of the Interior

## Bureau of Land Management

## Nevada

Carson City District  
Winnemucca District  
Battle Mountain District  
Elko District

## Idaho

Boise District  
Burley District  
Shoshone District

-1-

## State

## Nevada

## Department of Conservation &amp; Natural Resources

Division of Forestry  
Division of Parks & Recreation  
Division of State Lands  
Division of State Water Resources

Department of Fish and Game  
Department of Highways  
Department of Human Resources

## Office of the Governor

State Planning Coordinator  
Division of Urban Planning

## Public Service Commission

## Idaho

State Clearing House  
Bureau of Mines and Geology  
Department of Fish and Game  
State Lands Division  
Department of Water Administration

## Local Agencies

## County Commissioners and Planning Commissions

## Idaho

Jerome  
Twin Falls

## Nevada

Churchill  
Elko  
Humboldt

Lander  
Pershing  
Washoe

## Local

Owners of private land along the applied for route alternative in both Nevada and Idaho have been contacted and informed of the proposed project.

From September of 1973 through October of 1974, possible corridor

10-100

## ATTACHMENT B

## SECTION I, Page 12, Table I-1

## SUMMARY OF LAND REQUIREMENTS AND SURFACE DISTURBANCE

Concerning the mileages (Line 1): Utilizing a flat bed digitizing process which compensates for base map shrinkage or expansion, the mileages shown in the draft EIS agree within +2%. However, the mileages generated by the digitizing process were used in the subsequent surface disturbance analysis. A tabulation of the surface disturbance analysis follows this discussion.

Basic assumptions and criteria leading to later conclusions are as



follows:

1. Tower to Tower Access (10')
  - a. 10' wide  $\pm$  overland wherever possible
  - b. 1.0 x centerline length on 0% to 20% land slopes
  - c. 1.3 x centerline length on 20% to 40% land slopes
  - d. 1.6 x centerline length in areas in excess of 40% \*

\*Tower to tower access may be eliminated in those areas with slopes in excess of 40%.

## 2. Primary Supply Access (20')\*

\*This analysis indicates that none of the routes studied in the draft EIS would require 20' supply access.

## 3. Structure Site Disturbance

- a. 0.015 acres per structure agrees with EIS.
- b. 4.6 structures per mile x .015 = 0.0690 AC/mi structure surface disturbance.
4. Crane pad surface disturbance was not considered in this analysis for the following reasons:
  - a. On flat to moderate slopes, there is no necessity to grade a "flat" pad upon which the crane would operate.

- b. In most cases, on moderately sloped terrain the crane, if used, can operate safely from the end of the spur access road to the structure site.
- c. In areas where ground slopes exceed 20% it is becoming increasingly more popular/economic for transmission line contractors to utilize helicopters for structure erection, this eliminating the need for excessive crane pad excavation.

5. 13.6 miles of Idaho transmission line route common to all four alternatives will be located immediately adjacent and parallel to farm access roads, eliminating the need for the ten foot (10') tower to tower access. This reduction in surface disturbance is reflected in Line 3.b.1, in the column headed Stateline-Hunt.

6. No reduction in surface disturbance with helicopters was considered for the following reasons:

- a. Experience on the Tracy-Oreana segment of this project (a helicopter erection segment) has shown only a slight reduction in grading-excavation impact, due to eliminating the crane pad in rough terrain and allowing for steeper, thus shorter, access roads.

- b. The use of helicopters to erect structures does not eliminate the

-4-

need for access to the structure site to excavate and place tower foundations and anchors.

7. The significance of the access road mileages shown on Line 3.a.1 and 3.a.2 is to indicate the total amount of primary unpaved roadways requiring no improvements in the immediate vicinity of each route alternative. Paved access was not considered in this analysis due to the fact that no surface disturbance would occur along those routes.

## ATTACHMENT C

SECTION II, Pages 36 through 43

## DESCRIPTION OF THE ENVIRONMENT, SOILS AND WATERSHED

In reference to Soil Group Map, Page 41, and Erosion Hazard Map, Page 43, large areas are shown to have severe to moderate erosion hazard, due apparently to the identification of certain soil groups within particular geographic areas. No consideration was given to the fact that when these soil groups lie on flatter slopes, they would exhibit a considerably lower tendency to erode. Reference is made in the text to the effect that vegetation will offset the tendency for these soils to erode. However, the Erosion Map, which later (Section III) impact conclusions were drawn, did not take either slope or vegetation into consideration. Comments relative to the application of this Erosion Hazard Map, Page 43, will occur during the Section III Environmental Impact Review of this report.

## ATTACHMENT D

SECTION II, Page 69 DESCRIPTION OF THE ENVIRONMENT

Recreation Management Map - This map does not correctly show the relationship of the proposed Rock Creek Reservoir to the O'Neill Corridor. Information which we have from the Corps of Engineers indicates that the proposed high water line of the Rock Creek Reservoir is at an elevation of 4880 feet above sea level. At the point where the proposed O'Neill transmission line crosses Rock Creek, we have measured an elevation of 4908 feet, and that creek crossing is approximately two miles north of the 4880 high water elevation of the proposed reservoir.

## ATTACHMENT E

SECTION II, Page 90 DESCRIPTION OF THE ENVIRONMENT, ATTITUDES AND EXPECTATIONS

The last paragraph on this page contains a continuing discussion on local attitudes: "Since the traverse of the proposed electrical transmission line crosses lands predominantly devoted to livestock grazing, 97% Nevada, 82% Idaho, attitudes of the rural citizenry toward the action have been negligible."

There has been no attempt at obtaining "local" public input concerning attitudes towards the location of three of the four transmission line alternatives studied in the draft EIS. Areas of early public concern during the preparation of the S E & A Constraint Study were, the area north and east of Battle Mountain from Stony Point through Boulder Valley, the area west of Elko from the east end of the Carlin Tunnel to the Airport, the area south of Interstate 80 from the South Fork of the Humboldt River to Wells, the foothill area north of Elko and south of the Adobe Ranch.

-5-

need for access to the structure site to excavate and place tower foundations and anchors.

7. The significance of the access road mileages shown on Line 3.a.1 and 3.a.2 is to indicate the total amount of primary unpaved roadways requiring no improvements in the immediate vicinity of each route alternative. Paved access was not considered in this analysis due to the fact that no surface disturbance would occur along those routes.

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The last paragraph on this page contains a continuing discussion on local attitudes: "Since the traverse of the proposed electrical transmission line crosses lands predominantly devoted to livestock grazing, 97% Nevada, 82% Idaho, attitudes of the rural citizenry toward the action

-5-

## ATTACHMENT F

SECTION III, Page 113 through 116 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION, SOILS AND WATERSHED

If the statement "Disturbance of the soil profile by the proposed project will create more adverse impact to the environment, either directly or indirectly, than any other activity" is true, then by utilizing the surface disturbance analysis contained in the review of Table I-1 of this report, the percentage of impact of each alternative to the one having the greatest surface disturbance is as follows:

Highway	Metropolis	Adobe	O'Neill
489.6 AC 100%	449.6 AC 92%	442.7 AC 90%	410.7 AC 84%

There is continual reference throughout the draft EIS to the impact of "new access roads". It is not known at this point in time where the idea for the need for new access came from. It is the intention of this report to show that there is no need for any additional twenty-foot (20') wide primary access to the corridors on any of the four alternatives. This fact is reflected in the surface disturbance analysis contained in the review of Table I-1. To further support this position, a series of maps showing the location of all existing primary access for all alternatives being studied is included with this report. There is such a preponderance of public access in the vicinity of the O'Neill Corridor that it is difficult to believe that the addition of the transmission line tower to tower access will create any significant increase in public use of the transmission line corridor. If some extremely sensitive area were to be identified at a later date, access to that area could be restored to its original condition or rendered impassable. Table III-2 does not correctly show the total disturbed acreage for the foregoing reasons. The analysis following Table III-2, attempting to equate soil displacement should take into account soil classification if the analysis and its results are of any significance.

All soil types along the entire corridor route will not be disturbed to the full depth of one foot.



ADOBE RANGE CORRIDOR				METROPOLIS CORRIDOR			
OREANA VALMY	VALMY STATELINE	STATELINE HUNT	TOTAL	OREANA VALMY	VALMY STATELINE	STATELINE HUNT	TOTAL
74.5 mi.	180.0 mi.	57.0 mi.	311.5 mi.	74.5 mi.	187.5 mi.	57.0 mi.	319.0 mi.
1263.5 ac.	3052.8 ac.	966.7 ac.	5283.0 ac.	1263.5 ac.	3180.0 ac.	966.7 ac.	5410.2 ac.
94.8 mi.	54.3 mi.	41.5 mi.	190.6 mi.	94.8 mi.	57.4 mi.	41.5 mi.	193.7 mi.
39.9 mi.	65.7 mi.	11.9 mi.	117.5 mi.	39.9 mi.	90.2 mi.	11.9 mi.	142.0 mi.
90.2 ac.	217.8 ac.	52.5 ac.	360.5 ac.	90.2 ac.	226.9 ac.	52.5 ac.	369.6 ac.
3.5 ac. 9.4 mi.	6.5 ac. 17.4 mi.	0.4 ac. 1.0 mi.	10.4 ac. 27.8 mi.	3.5 ac. 9.4 mi.	4.2 ac. 11.2 mi.	0.4 ac. 1.0 mi.	8.1 ac. 21.6 mi.
5.4 ac.	13.3 ac.	4.3 ac.	23.0 ac.	5.4 ac.	13.8 ac.	4.3 ac.	23.5 ac.
0.7 ac.	1.7 ac.	0.5 ac.	2.9 ac.	0.7 ac.	1.7 ac.	0.5 ac.	2.9 ac.
9.8 ac.	23.1 ac.	6.7 ac.	24.6 ac.	9.8 ac.	22.7 ac.	6.7 ac.	39.2 ac.
5.7 ac.		0.6 ac.	6.3 ac.	5.7 ac.		0.6 ac.	6.3 ac.
442.7 ac.				449.6 ac.			
8.4 %				8.3 %			

December 3, 1976

Rev. Feb. 9, 1977

O'NEIL BASIN CORRIDOR					HIGHWAY CORRIDOR			
	OREANA VALMY	VALMY STATELINE	STATELINE HUNT	TOTAL	OREANA VALMY	VALMY STATELINE	STATELINE HUNT	TOTAL
1. TOTAL LENGTH OF CORRIDOR	74.5 mi.	152.4 mi.	57.0 mi.	283.9 mi.	98.3 mi.	194.5 mi.	57.0 mi.	349.8 mi.
2. TOTAL AREA WITHIN RIGHT OF WAY (140 wide)	1263.5 ac.	2584.7 ac.	966.7 ac.	4814.9 ac.	1667.2 ac.	3298.7 ac.	966.7 ac.	5932.6 ac.
3. ACCESS NEEDS								
a. Access To Corridor								
1. Graded County Roads	94.8 mi.	230.7 mi.	41.5 mi.	367.0 mi.	5.9 mi.	26.2 mi.	41.5 mi.	73.6 mi.
2. Existing Ranch-Mine Roads No Improvements	39.9 mi.	165.9 mi.	11.9 mi.	217.7 mi.	22.5 mi.	96.9 mi.	11.9 mi.	131.3 mi.
b. Access Between Towers		1						
1. Access Tower To Tower	90.2 ac.	184.4 ac.	52.5 ac.	327.1 ac.	118.9 ac.	235.4 ac.	52.5 ac.	406.8 ac.
2. Additional Access Road Disturbance Due To Slope	3.5 ac. 9.4 mi.	8.7 ac. 23.3 mi.	0.4 ac. 1.0 mi.	12.6 ac. 33.6 mi.	2.4 ac. 6.5 mi.	2.7 ac. 7.0 mi.	0.4 ac. 1.0 mi.	5.5 ac. 14.5 mi.
3. Graded Access Road								
4. SITE CONSTRUCTION								
a. Tower Sites	5.4 ac.	11.2 ac.	4.3 ac.	20.9 ac.	7.5 ac.	14.4 ac.	4.3 ac.	26.2 ac.
b. Tension Station	.8 ac.	1.5 ac.	0.5 ac.	2.8 ac.	1.0 ac.	1.8 ac.	0.5 ac.	3.3 ac.
c. Storage Yards	9.8 ac.	22.1 ac.	6.7 ac.	38.6 ac.	11.8 ac.	23.0 ac.	6.7 ac.	41.5 ac.
d. Sub Stations	5.7 ac.		0.6 ac.	6.3 ac.	5.7 ac.		0.6 ac.	6.3 ac.
TOTAL SURFACE DISTURBANCE	408.3 ac.				489.6 ac.			
PERCENT TO TOTAL R/W AREA	8.5 %				8.3 %			

## ATTACHMENT G

## SECTION III, Page 110 PARTICULATE MATTER

The statement "Considerable quantities of particulate matter are likely to be produced from tower site clearing operations and tower construction road improvements, new access construction, and general vehicular traffic along unpaved roads" appears to be a subjective statement and contradicts the statement made in the closing sentence of that same paragraph. It would seem appropriate at this point to re-emphasize the statement made in Section II, Page 27, Air Quality: "The largest source of pollutants over much of the area is naturally generated particulate matter from dust storms." In the second paragraph in this same Section, the statement, "Improvement and construction of access roads will undoubtedly draw general vehicular traffic to the area, further aggravating the dust situation." Based on our analysis of Section I, Page 12, Table I-1, it was determined that no new primary access would be required to construct any portion of any of the four route alternatives. Additionally, it can be shown that given a choice of travel on a higher quality existing County or farm road will be preferred by the recreational traveler over travel on a primitive series of transmission line construction roads.

## ATTACHMENT H

## SECTION III ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION, WATER

Of the twenty-one (21) live streams crossed by the O'Neil Corridor, twelve (12) streams have existing bridges or culverts in the immediate vicinity of the transmission crossing, thus eliminating the necessity for any construction activity to take place in the stream bed or riparian zone. A stream crossing bridge inventory has not been made on the three (3) remaining corridor alternatives.

## ATTACHMENT I

## SECTION III, Page 112, 113 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION - TOPOGRAPHY

The draft EIS fails to define or identify areas of "steep terrain". In the interest of accuracy, an analysis was made utilizing quantities shown on the surface disturbance table contained in an earlier section of this report.

CORRIDOR	GROUND SLOPES IN EXCESS OF 20% AS A % TO TOTAL
O'Neil	3.66%
Highway	1.29%
Adobe	2.76%
Metropolis	2.10%

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## ATTACHMENT M

## SECTION III, Page 128 ENVIRONMENTAL IMPACTS OF PROPOSED ACTION - LIVESTOCK GRAZING

The earlier analysis of surface disturbance in this report has shown that the total area of disturbance per corridor is considerably less than those areas used for the calculation of AUM reduction, shown in Table III-4. Our determination of livestock grazing reduction per corridor is as follows:

O'Neil Basin - 32 AUM  
Highway Corridor - 36 AUM  
Adobe Range Corridor - 33 AUM  
Metropolis Corridor - 33 AUM

## ATTACHMENT N

## SECTION III, Page 131 INTERRELATIONSHIPS WITH OTHER TRANSMISSION SYSTEMS

Page 131, paragraph 1: While reviewing this topic about Interrelationships with other transmission systems, the OES states, "Initial construction and operation of Intertie #2 will be at a 230KV configuration; however, detailed studies are presently underway by Sierra Pacific's planning department to determine the various effects and economics of a future conversion of the line to a 345KV designation, and when this upgrading should occur.

When this conversion does take place, the nominal power transfer capability of this intertie will increase to 282 MW.

The decision to design the line for 345KV capability was made after the Draft EIS writing was well under way. Increased tower spacing between phases, adequate numbers of insulators, and bundled conductor are three major items to be a part of the initial construction. To provide for these three items initially instead of a later date has increased the expenditures \$8500/mile or \$2,400,000.

## ATTACHMENT O

## SECTION III, Page 136 ECONOMICS &amp; SOCIAL CHARACTERISTICS

This comment has reference to the note regarding the water service area of Sierra Pacific Power Company and its effect on growth.

The company has a water service area which has been designated and certificated by the Nevada Public Service Commission and the company is obligated to serve customers within that area with municipal and industrial

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## ATTACHMENT J

## SECTION III, Page 116 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

The bar graph Figure III-1 is somewhat misleading, due to the fact that the location of supply points is dictated primarily by the site being secure (vandal free) and a sufficiently large supply inventory to service the assembly yards. There would be approximately five (5) supply points for a typical transmission line project within the 250 to 350 mile range. It is uneconomic to establish considerably more points than five or six, due to the requirement to fence and provide security patrol for each site. Inventory control also becomes a major problem, making sure that each site has exactly the right structure components for an efficient structure assembly process.

## ATTACHMENT K

## SECTION III, Page 119 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION - VEGETATIVE DISTURBANCE

The earlier analysis of surface disturbance and the tabulation, entitled "Summary of Land Requirements and Surface Disturbance" has shown that the total area of disturbance per corridor is considerably less than the amount shown in the bar graph Figure III-3.

## ATTACHMENT L

## SECTION III, Page 124 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION - LAND USES AND OWNERSHIP

No attention is addressed to the fact that certain lands lying along the major highways, railroads, and being situated near existing population centers have a higher developmental potential than other agricultural lands. While these lands may be presently used for agricultural cattle-grazing, there is a potential for a more intensive use, such as urban expansion, industrial, or crop farming. Generally speaking, overhead electric transmission lines conflict with those more intensive land uses, and given a route location choice it is wise and economic to avoid those areas.

-7-

water.

The water service area encompasses all of the cities of Reno and Sparks and contiguous Washoe County land with the exception of a part of the City of Reno in the Reno-Stead area in Lemmon Valley. The area includes land where water is being used for agricultural purposes as well as municipal and industrial use and it is estimated that the agricultural water will be changed to municipal and industrial use as the land use changes. Thus, providing adequate water supply for the land within the boundaries. Maintenance of the boundaries is necessary to maintain the water supply for the land where the water is now being used and provide for future expansion of urban growth.

The company does not facilitate or inhibit growth within the service area but plans and develops the water resource to meet the demands of the public being served.

The dichotomy does not exist because the water service area limits do not constrain growth in that area and adjoining areas in Washoe County served with electric power by the Company, and have growth potential through development of water resources by others.

## ATTACHMENT P

## SECTION III, Pages 141-142, Table III-9

## CORRIDOR CONSTRUCTION COSTS

The draft EIS presents a corridor construction cost comparison which treats only transmission construction expenditures with regard to flat or rugged terrain. The dollar cost per customer on a yearly basis is then determined by multiplying the total construction cost by 11.5%, which represents an annual interest payment on the borrowed capital. This annual cost is then divided by 116,000; which is the number of SPPCO customers.

The analysis is greatly oversimplified and does not adequately compare actual total cost differences between routes under the complex economic circumstances that exist at the present time.

A more comprehensive analysis would consist of beginning with the base cost to construct, which depends on miles of flat versus rugged terrain.

To this base, add any increases due to "interest during construction" caused by extended construction time associated with surveying a new longer route and building more miles of line. Then add rights-of-way costs for each route, plus actual surveying and archaeological clearing. The sum of these items yields a total construction, cost or capital requirement. Then, increased generation cost due to delay caused by surveying time and longer construction time must be considered, one after the other since construction cannot begin until all surveying, mapping, access road location and archaeological clearing is complete.

Last comes the annual increased cost of losses and increased maintenance

-9-



cost, both due to longer length. By taking a present worth of annual cost, one can develop an equivalent lump sum.

When all these capital costs, generation expenses and annual expenses are added, a total present day cost to build on each route is evident. By applying a capital recovery factor an equal annual equivalent amount is found which can be used to compare yearly costs of each plan.

The results of this analysis show that the Adobe route will cost \$9,321,000 more than the O'Neil Basin route. This means Sierra Pacific would have to increase revenues by \$1,077,000 per year to offset this added expense.

If one chooses to look at the increased cost per customer per year in an effort to compare this analysis with the one presented in the EIS, it would be \$9.29 per customer as opposed to \$1.00 when using only interest on capital cost to build. It must be emphasized that this method of trying to measure the impact on each customer is superfluous.

The following listing helps to explain the reasons why any of the three alternate routes will result in significantly higher cost to Sierra Pacific and its customers. Also attached is a table summarizing these differences, a revenue requirement comparison computer print-out, source data for the 16.3 per cent fixed charge rate and a resume of right-of-way ownerships and costs:

#### Factors Affecting Project Cost

##### 1. Levelized Annual Fixed Charge

A fixed charge rate of 16.3 per cent per year should be applied to all capital investment in plant rather than 11.5 per cent interest rate used in the EIS. The fixed charge rate includes insurance, depreciation, ad valorem taxes, income taxes and cost of money for a 40 year life. (See Attachment #1, development of fixed charge rate.)

##### 2. Rights-of-Way

The O'Neil Basin Route involves the least amount of privately owned land by a considerable margin. Most of the privately owned portion in Nevada is valued at \$100 per acre and is classified as grazing land. All of the three alternate routes involve higher percentages of privately owned land, much of which lies within developed areas and is subsequently more expensive. By comparison the estimated total right-of-way cost for the O'Neil Basin Route is \$380,000 versus \$555,000 for the Adobe Range Route.

Land values are as a result of a study made which included input from County Assessors, private land owners, previous fee appraisals of similar land, appraisers and personal experiences of the SPPCO Right of Way Department.

As a result of the study the following values have been assigned, the values are not necessarily true market value of the land, but they do indicate right of way value.

- 1) 4th Class Grazing - (mountainous - \$100 per acre.)
- 2) 2nd Class Grazing - (rolling hills, fair access) - \$150 per acre.
- 3) Flat land with good access near highway or railroads - \$200 per acre.
- 4) Farmland - \$300 per acre
- 5) Potential commercial - \$500 per acre.
- 6) Subdivision land or high activity area with good potential - \$1,000 per acre.

As the number of privately owned parcels crossed by the transmission line increases, so also does the probability of condemnation and litigation which results in delay and increased cost. (See Attachment Comparison of Rights-of-Way Costs).

##### 3. Surveying - Archaeological Clearing

To date, the cost incurred to meet BLM and NPSC requirements for surveying, mapping, and archaeological clearing of the applied for route is \$1,500 to \$2,000 per mile. Work on the O'Neil Basin Route has been completed from Oreama to the Nevada-Idaho state line by Sierra Pacific and most of the state-line to Hunt has been completed by Idaho Power Company.

Construction of a line on any of the other routes will result in the loss of this investment which will increase the total project cost. The Adobe Route has the most "common" corridor length but would require 185 miles of new surveying and clearing at a cost of \$277,000.

##### 4. Replacement Generation Costs

Since the object of this project is to make lower priced Utah Power and Light Co. power available to Sierra Pacific, any delay in completion of the project will result in higher cost replacement energy. The average difference between the two is estimated to be \$450,000 per month. Any route, other than O'Neil Basin will require more time to construct because of longer length, and surveying and archaeological clearing time. Construction proceeds at about 16 miles per month and surveying at 30 miles per month.

Increased generation cost of the Adobe Route over the O'Neil Basin Route is \$3,600,000; 2 months additional construction time, 6 months surveying and clearing time.

##### 5. Interest During Construction

Interest on investment during the construction period is capitalized as a part of the final project cost. The amount is calculated at 0.75 per cent per month. The delays noted in Part 4 result in an interest during construction cost increase of \$1,206,000 for the Adobe Route over the O'Neil Basin Route.

##### 6. Efficiency

Efficiency of any transmission line for a given voltage, conductor size and loading pattern is directly related to length. The alternate

-11-

routes vary from 29 miles longer for the Adobe Route to 74 miles for the Highway Route. Line loading is forecasted to be 100 megawatts in summer and 150 megawatts in winter, which results in an average dollar loss of \$4,860 per mile per year, of \$141,000 per year for the 29.0 mile increased Adobe Route length.

##### 7. Maintenance

Maintenance cost averages \$160 per mile per year for similar lines. Since the alternate routes are longer and closer to inhabited areas, vandalism such as gun-fire damage can be expected to cause even greater expenses.

#### ATTACHMENT Q

SECTION III, Page 141 ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION  
- ATTITUDES AND EXPECTATIONS

Reference is made to the defeated Reno-Sparks sewer bond issue and a suggestion that the defeat was related to a "no growth" attitude. Local community leaders feel that the first bond was defeated due to a total lack of information from the Cities of Reno and Sparks upon which the voter could have made an intelligent decision. This feeling by local officials was substantiated by the overwhelming approval by a 2 to 1 margin of all three sewer related issues in the November election, 1) the plant expansion, 2) the Reno Crosstown Interceptor, 3) the Lawton Interceptor. This section of the draft EIS should be revised to reflect these facts.

#### ATTACHMENT R

SECTION III ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION  
- SUMMARY OF MAJOR IMPACTS

Table III-10 should be revised to reflect the reduction in impact due to the elimination of the need for any additional twenty foot (20') wide primary access. The revision of the road impact will affect the soils-watershed vegetation, wildlife, and land use impact summaries. Under the Land Use Summary, no reference is made to the Highway, Adobe, and Metropolis corridors having an impact on those lands having a higher development potential, primarily due to their proximity to highways, railroads, towns, and public services such as power, natural gas, and telephone.

#### ATTACHMENT S

SECTION IV, Page 161 MITIGATING MEASURES - GENERAL COMMENTS

Page 161, paragraph 3:5 states that a set of specific stipulations will

-12-

be attached to the BLM grants of right-of-way. When will these specific stipulations be presented? If they are not to be presented until a specified pre-construction meeting, then we will be delayed beyond the right-of-way grant date to start any construction before compliance to the special stipulations are met. The specific and final specific stipulations should be presented to the grantee during the final EIS preparation. This will allow the grantee ample time to comply before a final right-of-way grant is issued. The contractor will also be aware of these specific stipulations while reviewing construction bid packages.

Page 162, paragraph 3: States that the mitigating measures will include all lands ownership.

As has been discussed with management personnel of both Sierra Pacific and the BLM, Sierra will apply all reasonable mitigating measures on private land as well as public, but private land right-of-way agreements are agreed upon between the private owner and Sierra and are not under the BLM jurisdiction.

Page 164, paragraph 1: States that the transmission line will be upgraded to 345KV at some future date, requiring access to the right-of-way a second time for construction purposes.

We again emphasize that no future access to the right-of-way is required for a future 345KV upgrade.

Page 168, paragraph 7, states that a crossbraced "H" frame tower will be used in agricultural areas. What if a more reasonable self-supporting structure is available? An applicant should not be limited to X-brace, H-frame if a single pole structure may be more economical.

#### ATTACHMENT T

SECTION V UNAVOIDABLE ADVERSE IMPACTS

Page 175, Soils and Watershed

The acreages given for the impact on the soil should be revised to reflect the elimination of the need for access, bringing the acreages depending on the corridor down to 411 to 490 acres.

#### ATTACHMENT U

SECTION V UNAVOIDABLE ADVERSE IMPACTS

Page 179, Comparative Impacts

A confusing aspect of Table V-1 is that up to this point in the draft EIS impact quantification was tabulated from an adverse standpoint. For example, a segment with a large number of acres, miles, tons, etc., would be an indication of the magnitude of impact. Table V-1 is analyzing











# Sierra Pacific Power Company

JOE L. GREMBAN  
President

033

13 December 1976

Mr. E. I. Rowland, State Director (N-911)  
Nevada State Office  
Bureau of Land Management  
Room 3008 Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

This replies to your request for comments on the Bureau of Land Management Draft Environmental Statement for the Oreana, Nevada to Hunt, Idaho 230-345 KV transmission line. Our comments are summarized and detailed and are explained in the attachments.

Comments are identified by Section and Page of the OEIS and by the letter designation assigned to the attachment to this letter.

(A) We have serious concerns about several sections of your OEIS. Incomplete and inaccurate statements must be corrected to allow full understanding and accurate evaluation of the proposed action. Briefly, the primary "overall" areas of concern involve:

- 1) Environmental work and considerations undertaken before the filing of our application. Considerable cost and manhours were expended by numerous Federal, State and local governmental bodies, as well as by SPPC and their consultants. Numerous highly qualified and concerned individuals contributed to efforts in this area.

This effort to realistically and thoroughly evaluate all environmental concerns received very little consideration in the OEIS.

Although the Environmental Analysis Report dated April 1975 as prepared by SE&A Engineers/Planners has previously been filed with the BLM and other agencies, a copy is enclosed to illustrate the depth and scope of the environmental analysis that was undertaken to determine the preferred route and it is requested that it be incorporated in the review process.



P. O. BOX 10100 / RENO, NEVADA 89510 / TELEPHONE 702/789-4278

E.I. Rowland  
BLM  
12-13-76  
pg 2

- 2) Evaluation and assessment of access road requirements and potential impacts. Several inconsistencies and inaccurate assessments have been found. This is probably due to unfamiliarity with construction needs, or is simply the judgment of one individual. Our concern and request is that a full consideration is given to all opinions and facts bearing on this portion of the report.
- 3) Evaluation and conclusions derived from the economic analysis. Serious shortcomings are contained in the "broad-brush" approach used in the report's analysis of project costs. Discussion between your staff and our engineers should have been undertaken to insure a full understanding of utility costs and their use in arriving at accurate conclusions.
- 4) Evaluations and conclusions presented regarding construction techniques and impacts. Again, discussions between those assessing this area and our personnel responsible and knowledgeable in construction equipment and methods are necessary if an accurate evaluation is to be made.

The opportunity to review and comment on the Draft Environmental Impact Statement is appreciated.

The comments submitted are the result of review by several departments within Sierra Pacific and by its consultants. It is requested that full consideration of the comments be given in the preparation of the final statement.

Sincerely,

*Joe L. Gremban*  
Joe L. Gremban,  
President

033

Attachment to Sierra Pacific Power Company letter to  
E.I. Rowland  
State Director  
Bureau of Land Management

re: Bureau of Land Management Draft Environmental Statement,  
"SPPC 230/345 KV Transmission Line; Oreana, Nevada to  
Hunt, Idaho".

This attachment contains Sierra's comments on the subject statement. The following is an index and summary of the detailed comments contained in Attachments A through V.

SECTION I, Page 16 - Preliminary Right of Way Studies (Attachment A)  
This comment points out the extent of environmental studies of alternate transmission line corridors that were made by Sierra Pacific Power Company and consultants, SE&A Engineers/Planners during 1973 and 1974. These studies involved input from government agencies and the public and the report was given wide distribution. This work was apparently not acknowledged or used in the DEIS. The significance is that the preferred transmission line location was chosen only after a thorough analysis of alternates and through extensive involvement of BLM personnel, the public and other agencies and organization.

SECTION I, Page 12 - Table I-1 (Attachment B)  
Summary of Land Requirements and Surface Disturbance  
This comment points out an inconsistency in the DEIS between the Soil Erosion Map Page 41 and the Erosion Hazard Map Page 43 and discussions in the text which led to impact conclusions in section III.

SECTION II, Page 69 (Attachment D)  
Description of the Environment  
This comment points out that the relationship of the proposed Rock Creek Reservoir and the O'Neil Corridor is not correctly represented on the Recreation Management Map.

SECTION II, Page 90 (Attachment E)  
Description of the Environment, Attitudes and Expectations  
The comment pertains to the last paragraph on the page which refers to attitudes of the rural citizenry and suggests that no attempt was made to obtain "local" public input concerning the three routes which were added in the DEIS.

SECTION III, Page 113 through 116 (Attachment F)  
Environmental Impacts of the Proposed Action, Soils and Watershed  
This is a comment dealing with soil disturbance by the proposed project and points out a defect in the OEIS wherein approximately 177 miles of 20 foot wide new access road is projected. The factual data in the comment and accompanying maps show that such a road construction and soil disturbance will not be required and this will have a far reaching effect on other aspects of the DEIS.

SECTION III, Page 110 (Attachment G)  
Particulate Matter

10-107

033

033 (C)

Attachment to Sierra Pacific Power Company letter to  
E.I. Rowland  
State Director  
Bureau of Land Management

re: Bureau of Land Management Draft Environmental Statement,  
"SPPC 230/345 KV Transmission Line; Oreana, Nevada to  
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SECTION III, Page 110 (Attachment G)  
Particulate Matter

This comment sets forth an inconsistency in the text of the DEIS relating to the production of particulate matter through power line construction as compared to statements in other sections of the report that say that the largest source of particulate pollution over most of the area is dust storms.



Attachment to Sierra Pacific Power Company letter to  
E.I. Rowland  
State Director  
Bureau of Land Management  
pg. 2

033

SECTION III, Page 111 (Attachment M)  
Environmental Impacts of Proposed Action - Water  
Of the 21 live streams crossed by the "O'Neil Corridor"  
twelve (12) have existing bridges or culverts in the immediate  
vicinity of the transmission line crossing. There has been no  
such analysis made on the other three suggested alternate  
routes by the DEIS.

SECTION III, Page 112, 113 (Attachment L)  
Environmental Impacts of the Proposed Action - Topography  
The DEIS fails to define or identify "steep areas" and this  
comment presents an analysis which shows the percentage of the  
total length having slopes in excess of 20%.

SECTION III, Page 116 (Attachment J)  
Environmental Impacts of the Proposed Action - Vegetative Dis-  
turbances.

The comment explains that the graph figure III-1 does not re-  
flect the most probable use of land for supply points and is  
misleading.

SECTION III

Environmental Impacts of the Proposed Action

Page 119 (Attachment K) Vegetative Disturbance

Page 124 (Attachment L) Land Uses and Ownership

Comments on these sections express differences in opinion on  
the amount of impact in these categories and also the necessity  
to weigh the impact of a transmission line more heavily on lands  
that are intensively developed or have that potential.

SECTION III, Page 128 (Attachment M) Livestock Grazing

This comment places a lower grazing reduction per corridor due  
to less area of disturbance than that developed in the DEIS.

SECTION III, Page 131 (Attachment N) Utilities

The comments in this section of the DEIS explain that conversion  
of the transmission line voltage from 230 KV to 345 KV will not  
require additional construction activities.

SECTION III, Page 136 (Attachment O) Economic & Social

Characteristics

The comment pertaining to Page 136 describes the position of  
Sierra Pacific Power Company regarding the water service area  
and points out that the company can neither inhibit or facilitate  
growth, but is obligated to serve the public with water in the  
specified area which is not fully developed.

Attachment to Sierra Pacific Power Company letter to  
E.I. Rowland  
State Director  
Bureau of Land Management  
pg. 3

033

SECTION III, Page 141-142 (Attachment P) Corridor Construction  
Costs

This comment is an explanation and revision of the OEIS analysis  
of construction costs associated with this project. It also ex-  
presses the additional costs involved if the transmission line is  
located on other than the O'Neil Basin Corridor. It is believed  
that the economics of the project should be treated more fully in  
the final impact statement.

SECTION III, Page 141 (Attachment Q) Attitudes & Expectations

The comment suggests correcting the statement regarding the de-  
feat of the Reno-Sparks sewer bond issue, since it has now been  
approved.

SECTION III, Page 159 (Attachment R) Summary of Major Impacts

The comment suggests the elimination of the need for twenty foot  
wide primary access roads, requires a correction of Table III-10,  
and further, the tabulation does not recognize that the Highway,  
Adobe, and Metropolis Corridors traverse lands of higher develop-  
ment potential due to proximity to services.

SECTION IV, Pages 161-168 (Attachment S) Mitigating Measures

SECTION V, Page 175 (Attachment T) Unavoidable Adverse Impacts,  
Soils & Watershed

This comment expresses the concern that Table V-1 should reflect  
the elimination of the need for new access roads is the basis of  
the comment.

SECTION V, Page 179 (Attachment U) Comparative Impacts

This comment expresses the concern that Table V-1 should reflect  
the level of impact reduction through use of low, medium, high  
graduations for each segment of each corridor and presents a  
suggested tabulation which is believed less confusing.

SECTION VIII, Page 190 (Attachment V) Alternatives to Proposed  
Action



LESLIE D. ANDERSON, Chairman  
COMMISSIONER  
ROBERT C. THOMAS, Chief of Game  
PAUL C. HARTON, Game Warden  
JOHN EATON, Game Warden  
JOHN VERBURGH, Game Warden  
J. JACK ALVORD, Forester

## IDAHO FISH AND GAME DEPARTMENT

Region 4  
868 East Main Street  
P.O. Box 428  
Jerome, Idaho 83338  
324-4350

December 10, 1976

Mr. E. I. Rowland  
Bureau of Land Management  
Nevada State Office  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89507

Re: Environmental Impact Statement (EIS) on Sierra Pacific Power Company's  
Proposed 230-345 KV Transmission Line, Oreana, Nevada to Hunt, Idaho.

Dear Mr. Rowland:

The Idaho Department of Fish and Game has reviewed only that portion of Sierra  
Pacific Power Company's EIS dealing with Idaho's wildlife and wildlife impacts  
and offer the following comments:

On April 2, 1976, we responded to the Nevada BLM's request for wildlife data  
for the four proposed routes. We still favor the O'Neil Basin corridor for  
the same reasons stated in the April 2 memo. In addition, since the proposed  
O'Neil Basin corridor passes through the extreme western portion of Shoshone  
Basin (an important sage grouse production and harvest area), we recommend that  
the transmission line be located as close as possible to existing U.S. Highway  
93 and the Union Pacific Railroad track. This would reduce the overall impact  
on existing sage grouse populations and protect valuable habitat. Sage grouse  
occur throughout the proposed corridor. The population is at an all time low  
and in danger of continued declines mostly because of habitat alterations.  
Additional human disturbance and habitat loss could be significantly detrimental  
to the population.

Because golden eagles are common in the area year around, we recommend that pre-  
cautions be taken to prevent their electrocution. This may involve special  
spacing of conductors and the construction of special hunting perches and nest  
platforms. The Boise District of the Bureau of Land Management and the Idaho  
Power Company should be contacted for specifications.

Mr. E. I. Rowland  
December 10, 1976  
Page 2

Page 52, Paragraph 4: Critical antelope winter ranges are not, but should be,  
included. Among these should be listed the area between Brown's Bench and  
Salmon Falls Reservoir which winters approximately 80 antelope. This is the  
only herd in the area between Twin Falls and the Nevada-Idaho border and is  
worthy of recognition. The area should also appear on the Big Game and Fisheries  
Map following page 54.

Elsewhere throughout the document, Idaho's wildlife values and anticipated  
impacts appear to be adequately addressed.

Sincerely,

IDAHO DEPARTMENT OF FISH AND GAME  
Joseph C. Greenley, Director

*William E. Webb*  
William E. Webb  
Region 4 Supervisor

WEM:la

cc: Environmental Services

034





# United States Department of the Interior

035

BUREAU OF RECLAMATION  
WASHINGTON, D.C. 20240

DEC 10 1976

IN REPLY  
REFERS TO: 611  
652.

Mr. E. D. Rowland  
State Director, Bureau of Land Management  
Department of the Interior  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

We have reviewed the Draft Environmental Statement, Sierra Pacific Power Company's 230/345-kV Transmission Line - Drena, Nevada, to Hunt, Idaho (DES 76-272), as requested in your memorandum of October 18, 1976. We have the following comments.

1. Pages 6-9. Three of the four corridors of the transmission lines analyzed in the draft pass over or near the Community Pasture lands of the Humboldt Project near Battle Mountain, Nevada. These pastures are leased and operated by the Pershing County Water Conservation District. Even though a route may cross these lands, no conflicts with grazing operations are anticipated. Future use of this land is not expected to change materially. We do not anticipate any significant impacts of the proposed action on these Reclamation lands.

2. Pages 126-127. Under the discussion of "Agriculture-Potential," impacts of the transmission line on potential new agricultural lands have not been evaluated.

No consideration has been given to the effects of crossing existing farm units which are now or could be irrigated by center pivot or wheel-roll irrigation systems. Transmission towers could seriously disrupt this type of irrigation operation.

Portions of the transmission line will cross the Salmon Falls Project. We suggest during the final planning and construction phases of the transmission line that thorough consideration of existing and proposed irrigation facilities be considered, and close liaison between the construction agency and the Bureau of Reclamation be maintained. Transmission line routing through lands with irrigation potential should parallel property boundaries, where practicable.

3. Pages 129-131. The relationship, if any, of the new transmission line to the transmission systems of Harney Electric Cooperative and the California-Pacific Utilities Company should also be discussed.

4. General Comments. The environmental statement would be enhanced by discussions on the following items:

- a. Noise levels.
- b. Fire prevention and control.
- c. Nonreflective conductors and towers.
- d. Possible radio and TV interference.

Sincerely yours,

*GF Sullivan*  
Acting  
Commissioner



# United States Department of the Interior

NATIONAL PARK SERVICE  
WASHINGTON, D.C. 20240

037

IN REPLY REFER TO:  
17619-460

## Memorandum

To: State Director, Bureau of Land Management  
Reno, Nevada

Through: Assistant Secretary for Fish and Wildlife and Parks

From: Assistant Director

Subject: Draft Environmental Statement, Sierra Pacific Power Company's Proposed 230/345 kv Transmission Line - Drena, Nevada to Hunt, Idaho (DES 76-42)

We have reviewed the draft environmental statement and offer the following comments for your consideration.

## COMMENTS ON THE ENVIRONMENTAL STATEMENT

On the basis of the preliminary studies conducted for the alternative corridors and the recommendations by Mary Rusco (page 276), it appears that construction along the O'Neil Basin Corridor would have the least impact upon the cultural resources. Therefore, other aspects being equal, we would recommend that the O'Neil Basin Corridor be selected for the project.

The 151 cultural resources located during the reconnaissance survey (page 98) should be described and evaluated for their National Register of Historic Place potential.

In lieu of comments from the Nevada State Historic Preservation Office, we concur with the commitment made on page 194 to solicit comments on proposals from the Advisory Council on Historic Preservation (ACHP).

Page 98 states that for the D'Neil Basin Corridor in Parts I and II of the survey area "a systematic collection of archeological specimens (sic) from the surface of small fragilla pattern sites have been completed by the Nevada Archeological Surveys". Until the cultural resources have been described and evaluated for their potential National Register significance and the Advisory Council on Historic Preservation given an opportunity to comment, any mitigation measures, including surface collection, is inappropriate. In addition, preservation of the materials *in situ* is preferable to salvage of the resources, unless all other prudent and feasible alternatives have been exhausted. Therefore, decisions concerning a mitigation strategy should be deferred until the final corridor route has been selected. Once the final route has been designated, then an intensive on-the-ground survey of the corridor should be conducted by a qualified archeologist and a mitigation plan of data recovery or avoidance should be developed in consultation with ACHP.

The determination of a "no adverse effect" as discussed on page 178 should conform to ACHP guidelines. The final environmental impact statement should discuss in greater detail the proposed data recovery program. This information should include the name and qualifications of the Supervisory Archeologist, research objectives, and should specify the methods and techniques to be used for recovery of data contained in the property. This plan should meet with the approval of the Advisory Council on Historic Preservation.

We request that copies of any archeological reports received, including the survey report by Mary Rusco be forwarded to the National Park Service, Western Archeological Center, so that a more comprehensive review of the final statement will be possible.

*Raymond L. Freeman*



# UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE  
HUMBOLDT NATIONAL FOREST  
976 Mountain City Highway  
Elko, Nevada 89801

036

8400 (2720)

December 10, 1976

Bureau of Land Management  
Nevada State Office  
Room 3008 Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Sirs:

The Forest Service, Humboldt National Forest, has reviewed the Draft EIS on Sierra Pacific's proposed 230/345 KV transmission line from Oreana, Nevada to Hunt, Idaho.

Our primary concern was the effect the line might have insofar as visibility from the Jarvis Wilderness Area. Upon close review of the location and facility planned for construction, we do not feel that wilderness values there will be affected by construction of the line on the route proposed.

Thank you for the opportunity to comment on a very comprehensive and well written EIS.

Sincerely,

*JDE L. Frazier*  
JDE L. FRAZIER  
Acting Forest Supervisor







039

## STATE OF IDAHO

DIVISION OF BUDGET, POLICY PLANNING AND COORDINATION  
BOISE, IDAHO 83720H. W. TURNER  
ADMINISTRATORCECIL D. ANDRUS  
GOVERNOR

December 10, 1976

IDAHO DEPARTMENT OF WATER RESOURCES

COMMENTS ON

DRAFT ENVIRONMENTAL STATEMENT

Proposed Transmission Line -- Oreana to Hunt

1. Page 5, Line 5: Should read -- Idaho Department of Water Resources Stream Channel Alteration Permit.

2. Page 170: Should include reference to the requirement by Idaho Department of Water Resources that a stream channel alteration permit be obtained for any alteration of a continuously flowing stream below the mean high water mark.

3. General Comment: There is insufficient detail on the disturbance that would be caused by stream crossings. When this information is available, the department will evaluate and comment on this aspect of the proposal.

BUREAU OF LAND MANAGEMENT  
Nevada State Office  
Room 3008 Federal Building  
300 Booth Street  
Reno, Nevada 89509

Att: E. L. Rowland

Dear Mr. Rowland:

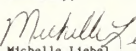
The State Clearinghouse sent copies of the draft environmental statement on the Sierra Pacific Power Company's proposed transmission line from Oreana, Nevada to Hunt, Idaho to the following agencies:

Dept. of Lands \* attached  
 Dept. of Transportation  
 Parks and Recreation Department  
 Dept. of Water Resources \* attached  
 Ken Stolz, Physical and Natural Resource Planner  
 Office on Energy  
 Health and Welfare, Div. of Environment  
 Region IV Development Association, Inc. \* no comment  
 Sawtooth National Forest \* no comment  
 Dept. of Agriculture

We are attaching copies of the comments received from the Department of Water Resources and the Department of Lands.

We appreciate the opportunity to review.

Sincerely,

  
 Michelle Liebel,  
 State Clearinghouse

If

attachments

cc: Water Res., Lands EQUAL OPPORTUNITY EMPLOYER



039

## STATE OF IDAHO

DIVISION OF BUDGET, POLICY PLANNING AND COORDINATION  
BOISE, IDAHO 83720H. W. TURNER  
ADMINISTRATORCECIL D. ANDRUS  
GOVERNOR

17 November 1976

TO: Department of Lands  
Statehouse Mail

DATE: November 2, 1976

FROM: State Clearinghouse  
Bureau of State Planning and Community Affairs  
Statehouse  
Boise, Idaho 83720

RE: Proposed Transmission Line - Oreana to Hunt

SAI # D1167612

The enclosed draft environmental statement is referred to you for review and comment in accordance with the U. S. Office of Management and Budget Circular A-95. If your agency has an interest in this document and wishes to comment on it, please check the appropriate box (es) and return this memo, with your comments, to the State Clearinghouse no later than December 10, 1976.

☐ No Comment☐ Contacted Applicant☐ I Was Already Aware of This Project☒ Comments AttachedReviewers Signature Lyman H. Thallner Date 11-17-76Title NATURAL RESOURCE PLANNER

Comments on Proposed Transmission Line, Oreana to Hunt - Sierra Pacific Power Company

Page 124 - Land Uses and Ownership

This section does not actually address ownership. An appendix showing how many acres of each ownership are affected by each alternative would be helpful. For example:

Landowner	Acres Affected		
	Alternative A	B	C
State of Nevada	X	X	X
State of Idaho	X	X	X
Federal Government	X	X	X
Private	X	X	X

10-110

UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE  
324 25th Street  
Dgden, Utah 84401

040

84DD

December 13, 1976



Mr. Edward I. Rowland, State Director  
Bureau of Land Management  
Room 3008 - Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

Enclosed is a copy of a letter from the Forest Supervisor, Sawtooth National Forest, regarding Salina Pacific Power Company's proposed 230/345 KV Transmission Line.

It appears that the Sawtooth will have no further input since the proposal no longer involves National Forest land.

We understand that the Humboldt National Forest has responded directly.

Sincerely,

P.M. REES  
Director, Regional Planning  
and Budget

UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE  
Sawtooth NF

040

REPLY TO: 84DD Environmental Statements

December 9, 1976

SUBJECT: Sierra Pacific Power Company 230/345 KV Transmission Line -  
Oreana, Nevada to Hunt, Idaho



TO: Regional Forester

We have reviewed the subject environmental statement and have no comments that need to be forwarded to the Nevada State Director of the Bureau of Land Management. The Forest was involved in the early planning stages for this project because of the stringent requirements that must be met when a power line crosses National Forest lands. Sierra Pacific made the decision to skirt around the edge of the National Forest.

We have responded to an inquiry from the Idaho State Clearing House, but had no specific comments regarding the proposal.

In the event you have not been contacted regarding this proposal, the reply should be addressed to State Director (N-911), Bureau of Land Management, Room 3008 - Federal Building, 300 Booth Street, Reno, Nevada, 89509.

for  
E. A. FOURNIER  
Forest Supervisor

6250-11 (1-66)



United States Department of the Interior

043

FISH AND WILDLIFE SERVICE  
1500 N.E. IRVING STREET  
P.O. BOX 3737  
PORTLAND, OREGON 97208

Reference: EC

To: State Director, Bureau of Land Management, Reno, Nevada  
From: Assistant Regional Director, Environment, FWS, Portland, Oregon  
Subject: Draft Environmental Statement, Sierra Pacific Power Company's proposed 230/245 kv transmission line--Oreana, Nevada, to Hunt, Idaho

We have reviewed the subject document and offer the following comments.

General Comments

The Highway Corridor would be the least damaging route from a fish and wildlife standpoint, followed by the Metropolis and Adobe Corridors, respectively. The D'Neil Basin Corridor would be the most destructive route. Many adverse environmental impacts are associated with it.

The D'Neil Basin's topography and vegetation are not receptive to disturbances. Sixty-one percent of the corridor is through an area listed as having severe erosion hazards. The net result of a transmission line through this corridor would be an increase in soil erosion and a decrease in water quality which would last for many years after construction is completed. The likelihood of successfully revegetating these areas appears remote.

Specific Comments

Page 54, last sentence. The bald eagle is mentioned as a raptor wintering in the study area. It should be noted that this is currently under consideration for possible inclusion on the Secretary of the Interior's list of endangered species. This might also be mentioned on page 60 under "Threatened and Endangered Species."

Page 121, Wildlife, last paragraph. "...the potential loss of 290 to 400 acres of big game habitat... will not significantly affect the overall mule deer or antelope populations..." Nevada's mule deer populations have been declining for the past several years. The narrative says that the proposed corridor would require construction of 286 miles of new roads. Such additional access and associated human activities into remote areas could cause further decreases in deer populations.



10-111

Save Energy and You Serve America!



Page 124, Threatened and Endangered Species. This section should mention that the Lahontan cutthroat trout, Salmo clarki hanahawi, occupies Marys River and tributaries. Without adequate safeguards, soil disturbances associated with transmission line construction through O'Neil Basin could cause stream deterioration and increased bank erosion and turbidity, thereby adversely affecting this threatened species' habitat. The text should clearly address the need to prevent deterioration of this environment and how it would be accomplished with the project.

Page 124, Threatened and Endangered Species, last sentence. Peregrine falcons and bald eagles may also be impacted by increased human activities brought about by improved access to their wintering areas. Harassment to these birds during stress periods could prove detrimental. This possibility should be recognized in the document and procedures to meet the requirements of the Endangered Species Act of 1973 addressed.

Page 181, Chapter IV, Mitigating Measures. Although some excellent measures are discussed, some of this chapter seems vague or unrelated to mitigation. If possible, inclusion of more specific measures would be desirable.

We suggest that regardless of the route selected, the following measures should be considered for inclusion in project plan. No construction activity should be conducted within or near sage grouse critical habitat, waterfowl nesting areas, raptor eyries, deer fawning areas, or antelope kidding grounds during periods of use. Removal of riparian vegetation should be kept to a minimum. If the O'Neil Basin corridor becomes the selected route, all transmission facilities in areas of "severe erosion hazard" should be installed and maintained by helicopter. This would eliminate the possibility of increased human disturbances in critically sensitive wildlife areas and protect water quality.

Page 161, paragraph 3. The text says that "specific measures...will be incorporated as stipulations to BLM grants of right-of-way..." What are these stipulations?

Page 162, paragraph 2. We suggest that sessions to identify "environmentally sensitive areas" should be accomplished prior to completion of the final environmental statement and procedures, and stipulations required to protect the environment delineated.

Page 162, last paragraph. This paragraph appears to deal with standard operating procedures relating to road construction and maintenance rather than with mitigating or environmental protection measures.

Page 165, Wildlife. The discussion of means to assure protection of hawks, owls, and eagles satisfactorily addressed need for compliance with Federal and State laws. However, we suggest comments on habitat loss reduction or damage prevention measures would be desirable.

2

COMMISSIONERS  
Marla Boies  
JOHN C. CARPENTER  
THOMAS L. MURPHY  
GEORGE R. E. BOUCHER  
COUNTY MANAGER  
(702) 738-8388

## Board of County Commissioners

ELKO COUNTY COURTHOUSE  
ELKO, NEVADA 89801

December 16, 1976

Mr. E. I. Rowland  
State Director, Nevada  
Bureau of Land Management  
Room 3008, Federal Bldg.  
300 Booth Street  
Reno, Nevada  
89509

RE: 1792  
Oreana-Hunt ES  
(N-911)

Dear Mr. Rowland:

Thank you for your letter of December 10 answering my letter of November 24 concerning late comments concerning the final Environmental Statement on the Oreana-Hunt proposed powerline. The County of Elko Board of County Commissioners and Planning Commission at their recent regular December meetings discussed the Environmental Statement. It was the opinion of both commissions that they continue to endorse the O'Neil route for the Sierra Pacific Powerline Proposal.

Thank you for contacting the County of Elko in this matter. Please advise as necessary.

Sincerely yours,

*George R. E. Boucher*  
GEORGE R. E. BOUCHER  
Elko County Manager

GREB/lm

cc: SE&A, Inc.  
Engineers-Planners Architects  
950 Industrial Way  
Sparks, Nevada 89431  
ATTN: Harry R. Ericson, Vice-President

Page 165, Wildlife, last sentence. "Protection of the Lahontan cutthroat trout will be accomplished by adherence to the previously listed mitigating measures." These measures do not appear adequate for habitat protection of this threatened species. We urge the project be designed to safeguard this fish by preventing any deterioration of its aquatic environment.

Page 172, fourth paragraph. The statement "Impacts to wildlife will occur mainly during the construction phase,..." is incorrect. Project impacts on wildlife could continue to occur for an extended period. Soil erosion, loss of vegetation, and increased human activities along the route will affect wildlife for many years to come.

*J. W. Teeter*  
James W. Teeter



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX  
100 CALIFORNIA STREET  
SAN FRANCISCO, CALIFORNIA 94111

045

Mr. E. I. Rowland, State Director  
U.S. Department of the Interior  
Bureau of Land Management  
Nevada State Office  
Room 3008 Booth Street  
Reno NV 89502

DEC 20 1976

Dear Mr. Rowland:

The Environmental Protection Agency has received and reviewed the draft environmental statement for the Sierra Pacific Power Company 230-345 KV Transmission Line, Oreana, Nevada to Hunt, Idaho.

EPA's comments on the draft environmental statement have been classified as Category LO-1. Definitions of the categories are provided on the enclosure. The classification and the date of EPA's comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions under Section 309 of the Clean Air Act. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and the adequacy of the environmental statement.

EPA appreciates the opportunity to comment on this draft environmental statement and requests one copy of the final environmental statement when available.

Sincerely,

*Paul De Falco, Jr.*  
Paul De Falco, Jr.  
Regional Administrator

Enclosure

cc: Council on Environmental Quality  
OER, Region X  
J. Wise, Water (W-1)  
C. Hopper, Air (A-4)



Comments on Sierra Pacific Power Company  
Transmission Line, Oreana, NV. To Hunt, ID.

Water:

We find that the DEIS has done an excellent job of delineating the water quality impacts of the alternative projects. From a water quality perspective, the DEIS indicates that the applicant's proposed alignment (the O'Neil Barry Corridor) would have greater unavoidable impacts because of the greater number of stream crossings and greater service road acreage subject to erosion.

The DEIS identifies many effective measures to minimize potential impacts on water quality. We urge the Bureau to see that the measures discussed are, in fact, implemented and additionally recommend that the Bureau review and consider applicable erosion control measures contained in Process, Procedures and Methods to Control Pollution Resulting from All Construction Activity, EPA 430 15-73-007 (copy attached). Construction impacts and potential mitigation measures should be reassessed throughout the planning, design and construction phases of the project to ensure that the water quality impacts are minimized to the fullest possible extent.

EPA notes that the power transmitted by these facilities would serve projected development in the Truckee Meadows area of Nevada. EPA is concerned about the adverse effects of such development on the air and water quality of the Truckee River Basin and is currently assessing these impacts in a DEIS to be published in January, 1977. We urge decision makers to consider these impacts before project capacity is determined.

Air

The existing air quality in the Reno-Carson City-Tahoe area should be represented, as this area is the principle electrical consumer and since air quality in that area may be impacted by secondary growth caused by increased availability of electrical power (Page 134).

Region X Comments (Associate Reviewer)

We believe that the DEIS provides an excellent discussion of the environmental effects of the alternative routes available for this powerline and of the effects of the construction and operating of the lines. In all the areas of EPA's jurisdiction, the discussion is sufficient to support routine conclusions that the line's construction and operation will not result in violations of relevant environmental standards.

Additionally, we found the statement's use of multi-colored graphics to display different features of the physical environment to be particularly helpful in giving us a picture of the environmental issues involved in the routing selection of discussion. We have, in fact, recommended such approach to other agencies and other offices of the BLM.

However, given that one of the objectives of the Federal Water Pollution Control Act, as amended, is to make all of the nation's significant waterways fishable and swimmable, we think that it would be appropriate for this statement to attempt to quantify the effects of powerline construction on anadromous and resident fisheries. It would also be appropriate for BLM to condition the right-of-way grants of all stream crossing procedures and to ensure that all equipment used are subject to the approval of the appropriate Fish and Game agencies at the State and Federal level.

We believe the environmental benefits of using the "Highway Corridor" rather than the applicant's proposed corridor more than justifies the additional costs involved in building a longer transmission line. This corridor seems to involve significantly less impact on numerous sensitive environmental resources.

EIS CATEGORY CODES

Environmental Impact of the Action

LO--Lack of Objections

EPA has no objection to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER--Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to reassess these aspects.

EU--Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

Adequacy of the Impact Statement

Category 1--Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2--Insufficient Information

EPA believes that the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3--Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement.

If a draft impact statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.



J  
**T LAZY S RANCH**  
BATTLE MOUNTAIN • NEVADA

December 29, 1976

047

Mr. E. I. Rowland  
December 29, 1976  
Page Two

047

Mr. E. I. Rowland  
State Director  
Bureau of Land Management  
Room 3008, Federal Building  
Reno, Nevada 89509

Dear Mr. Rowland:

The purpose of this letter is to express our strong objection to the proposed Adobe and Highway/Metropolis Corridors for Sierra Pacific Power Company's 230/345 kv transmission line from Oreana, Nevada to Hunt, Idaho. Since receiving the Bureau's notice regarding this matter in late October, we have reviewed the Draft Environmental Statement dated August, 1976 and have discussed this matter with Bob Leighton of Sierra Pacific, and Bill Calkins and Ed Tilzey of the BLM.

NOTICE PERIOD

Before stating our arguments in favor of the O'Neil Route and in opposition to the Adobe and Highway/Metropolis Corridors, we wish to express our disappointment at what we consider to be the inadequate notice of these alternative corridors to ourselves and others most directly effected by them.

Since receiving notification from Sierra Pacific on June 19, 1974, almost all published information on the proposed power line has concerned the O'Neil Route. The notice from the Bureau last October made no specific mention of alternate corridors and we logically assumed that the hearing on November 16 involved the O'Neil Route. Recent discussions with many of our neighbors indicate that they believed likewise.

We question how the BLM, after spending two years in preparing the Draft Environmental Statement, could give the farmers and ranchers along these southerly corridors only 60 days during their busiest season in which to respond.

BACKGROUND

The T Lazy S Ranch is a commercial cow/calf operation running on about 325,000 acres in Lander, Eureka and Elko counties; of this acreage about 225,000 acres is private fee land. We run a herd of about 7,000 animals and sell 4,000 calves each year. We employ over 2 people, all of whom live on the ranch with their families, and generate annual expenditures, primarily within the state, in excess of \$500,000. Property taxes exceed \$50,000 annually.

REPLY TO: ☐ BOX 232, BATTLE MOUNTAIN, NV 89602 • ASK OPERATOR FOR T LAZY S NO. 1  
☐ BOX T, BEVERLY HILLS, CA 90213 • (213) 276-9191

047

Mr. E. I. Rowland  
December 29, 1976  
Page Three

Since power costs in Nevada are already among the highest in the western states, a further and unnecessary increase in such costs can only be viewed as irresponsible.

Reduced Agricultural Profitability and Potential

The most immediate impact on our operation will be the loss of productivity along our meadows adjacent to the Humboldt River. We know from experience that once soils in this area are disturbed soil productivity decreases dramatically for an extended period. In the mid 1950's, 400 acres were leveled in this area in an attempt to develop increased hay production. Today, over 20 years later, production on this ground is only about 50% of that on adjacent ground. For this reason, all future farming developments on our ranch will involve sprinkler rather than flood irrigation systems which leave the soil profile relatively undisturbed because leveling is unnecessary. One need only compare the productivity of the flood irrigated farming developments in Antelope Valley, south of Battle Mountain, to the sprinkler irrigated farms in Paradise Valley, near Winnemucca, to be convinced of this point.

The heavy vehicular traffic associated with power line construction plus the need to construct all weather roads within the Humboldt flood plain will have a detrimental effect on forage production to a much greater extent than the relatively narrow right-of-way upon which the grazing impact estimated on Page 128 of the Draft Environmental Statement was apparently based. This area is also subject to sporadic uncontrolled flooding from Rock Creek and to a secondary degree from Boulder Creek.

Since our cattle are supported during the five winter months on the roughly 30,000 acres along the Humboldt (of which 5,000 are flood irrigated and farmed) a loss of forage production in this area would have a significant impact on carrying capacity, and hence on profitability.

In addition, power lines across the new farm acreage under development will require abandonment of each quarter section traversed, since pivot irrigation systems require a full quarter section in which to operate. Each quarter section so abandoned will mean a loss of revenues of over \$70,000 annually to the local area.

Finally, large and unsightly power lines will undoubtedly make our ranch a less desirable place to live and work. Such an eventuality would not only compound employment problems but will ultimately result in a lower market value for the ranch being reflected on property tax rolls.

Over 6,000 acres are presently farmed, primarily along the Humboldt River. Additionally, we are in the process of developing in excess of 10,000 acres for commercial farming. Development of this new acreage will mean an additional 100 jobs and \$5,000,000 in annual revenues to the local area. Many of the people associated with this planned development are expected to live within the ranch. Details of this development may be found in our report entitled "Prospective Agricultural Development Program" dated February, 1976. Although this development was known to both the BLM and the State Water Resources Engineer, no reference to it appeared in the Draft Environmental Report.

The proposed Adobe and Highway/Metropolis Corridors pass directly through our existing irrigated meadows and our new farm acreage under development. In addition these corridors are located adjacent to existing and planned headquarters areas, employee residences and our airstrip. We also plan the construction of additional facilities along this route. A map showing these critical areas of the ranch in relation to the proposed corridors is shown in Exhibit I.

It is our belief that these proposed southerly corridors compare unfavorably with the O'Neil Route when Economic, Social, and Land Use and Ownership factors are considered in depth.

ECONOMIC CONSIDERATIONS

The proposed southerly corridors will create serious unfavorable economic consequences both from the standpoint of increased power costs and from decreased potential and profitability of our own cattle and farming operation.

Increased Power Costs

Although the Bureau's Draft Environmental Statement states that the added cost of the southerly corridors will average only about \$3 million more than the O'Neil Route, in recent discussions with Sierra Pacific we have gathered that the premium will be closer to \$12 million taking all costs into consideration. In addition, the cost of condemning the additional private property involved (about 50% more than that required for the O'Neil Route) in the southerly corridors could add as much as \$20 million.

Furthermore, since much of the land along the Humboldt River and through the Rock Creek flood plain is subject to seasonal flooding and is normally impassable during up to five months of the year, construction costs for heavier tower footings, roadway and drainage facilities, plus higher maintenance costs associated with such conditions will add significantly to these higher power costs.

Mr. E. I. Rowland  
December 29, 1976  
Page Four

047

SOCIAL CONSIDERATIONS

From a social standpoint we believe the southerly corridors are less desirable than the O'Neil Route as well. Visual, Cultural, Historical and Recreational considerations are all rather subjective in nature but we find the conclusion drawn in the Draft Environmental Statement to be particularly abstract.

Visual Impact

The Draft Environmental Statement rates the Adobe and Highway/Metropolis Corridors as having either low or medium visual impacts (see page 145 of the Statement). Most persons who have stood in the meadows along the Humboldt or enjoyed the vista of Boulder Valley from Interstate 80 would take issue with this. The irrigated meadows along the Humboldt are never more than a few miles wide and the intrusion of power lines and towers would have an inescapable visual presence since no topography exists to diminish their impact.

Existing wooden power and telephone pole lines throughout the valley have a relatively minor impact due to their size and color. Even on the valley floor they are not readily noticeable from two or three miles away. For the most part existing visual intrusions are confined along the southern edge of the valley at the base of the Argenta Mountains and are obscured to a degree by the topography.

From a visual standpoint the proposed southerly corridors could not be more poorly located. With these corridors running through the center of the valley and directly over our existing meadows and planned farming areas as they do, it is obvious that no attempt has been made to camouflage their impact by utilizing the surrounding topography.

Cultural Impact

Certainly the most detrimental impact of the proposed southerly corridors will be to the people who live and work along these paths. To us the rural beauty of the area where we spend most of our time will be permanently marred. Frankly, the idea of these mammoth towers within one-quarter mile of our residences is difficult to comprehend. Many of us have chosen to live in Nevada to escape this very thing.

We are concerned, as well, about the impact of these power lines on commercial radio and television reception and on two-radio communications. We expect that such radio communications will become increasingly important to our operation.



Mr. E. I. Rowland  
December 29, 1976  
Page Five

There are undoubtedly many times the number of people who would be effected in this way along the southerly corridors than the O'Neil Route. Also, when traveling along Interstates 80, many times the number of people will be exposed to a power line along the southerly corridors each day than on the O'Neil Route in a year.

#### Historical Impact

The proposed Highway/Metropolis Corridors would be located along the most significant historical section of the state. Prior to the advent of the white man the Humboldt River provided a reliable source of food and water for early inhabitants and, as the Draft Environmental Statement points out, many semi-permanent encampments have been found along it. More recently the area has been the site of the California Trail, the first transcontinental railway, and the first transcontinental highway. Many of the famous personalities who shaped the history of the West traveled this very route. Must we now desecrate such a historic area in order to preserve another route relatively void of historical significance?

#### Recreation and Wildlife Impact

Not only will the proposed southerly corridors degrade the recreational enjoyment of areas in close proximity to Battle Mountain and other towns along the route, but they will be particularly detrimental to the enjoyment of the proposed Rock Creek Dam. Access to this site will run along the south easterly base of the Sheep Creek Range from Battle Mountain in close proximity to the proposed southerly corridors for several miles. Again the number of people engaged in recreational activities who would be exposed to power lines along the southerly corridors will be many times greater than those exposed along the O'Neil Route.

From a wildlife standpoint the Draft Environmental Statement fails to mention the substantial permanent deer population residing in the meadows along the Humboldt. This wildlife plus pheasant, partridge and duck residing in the same area make the flood plains of the Humboldt among the most intensive wildlife areas of the state.

#### LAND USE AND OWNERSHIP

Perhaps the most incomprehensible section of the Draft Environmental Statement deals with Land Use and Ownership. When only 5% of the land in Nevada is held by private individuals (see Exhibit II) and only about .5% has the soil and water resources for cultivation (according to the BLM study dated September 30, 1976, only about 375,000 acres have irrigation potential of

Mr. E. I. Rowland  
December 29, 1976  
Page Seven

more people live, work and travel along the southerly corridors, exposure will be many times greater than that for the O'Neil Route and the resulting cultural impact proportionally greater.

Finally, from a land use and ownership standpoint it would appear highly irresponsible to condemn and depreciate any more private land than absolutely necessary, given that only about 5% of all the land in the state is owned by private individuals. When such action also involves unnecessary condemnation of our scarce ir-igatable land (less than .5% of the land in Nevada), we find this even harder to justify.

We hope the Bureau will find the above arguments persuasive. In addition we offer the following two comments:

First, the Draft Environmental Statement mentions on several occasions the unfavorable visual impact of reflected light from the aluminum towers and insulators. Why then cannot these towers be fabricated with an anodized finish in tan, brown or other shades complimentary with the natural surroundings? Anodized finishes are durable and the added cost would no doubt be much less than that for the proposed southerly corridors.

Second, the primary argument for the Highway/Metropolis Corridors seems to be that they are located in areas in which man has already intruded. This being the case, then why not locate these adjacent to the interstate highway rather than through meadows which have essentially not changed for the last 100 years.

Along the Boulder Valley, power lines could be located south of the highway at the base of the Argenta Range (see Exhibit I). The visual impact would be minimized by the mountains and an unobstructed view from the highway of the Humboldt River and Boulder Valley would be preserved.

Although we do not favor this latter approach over the O'Neil Route for reasons already stated, almost any path through the Boulder Valley is preferable to those proposed in the Draft Environmental Statement.

We will appreciate your consideration of our comments.

Very truly yours,

*C.B. Thornton, Jr.*  
C. B. Thornton, Jr.

Enclosures

Mr. E. I. Rowland  
December 29, 1976  
Page Six

which about 325,000 is already developed) it is difficult to understand how anyone could suggest that these scarest of Nevada resources are to be sacrificed.

The argument for these southerly corridors is apparently that the rural, rugged areas of Nevada are a valuable resource and should be protected. We would be among the first to agree that no natural resource should be wasted. But land to farm and live on is an even scarcer resource. Over 60 million acres in Nevada are devoted to public and multiple use purposes. In fact, there is more public land in the state of Nevada alone than farm land in the 11 western states. Much of this land offers scenic and recreational resources comparable to that along the O'Neil Route. The environmental loss of a few thousand of these acres is of relatively small consequence. But the loss to our productive lands is significant.

The issue is simply this: Are we to construct 286 miles of power lines in remote areas which some of us may see only a few days each year, or will we construct an average of 332 miles of power lines immediately adjacent to the areas in which we live, work and travel and must look at 365 days each year. Certainly many people visit Nevada for its scenic recreational opportunities, but many more are here permanently because it is a satisfying environment in which to live and work.

The T Lazy S Ranch is one of the few blocks of private land left in the state which has the soil and water resources to develop a commercial farming operation of sufficient size necessary to be economically feasible. With this nation's growing imported fuel bill financed to a great extent by agricultural exports, it seems foolish to us to discourage development of this critical source of international trade.

#### CONCLUSIONS

In the foregoing we have tried to show that the proposed Adobe and Highway/Metropolis Corridors are far less desirable than the O'Neil Route on Economic, Social and Land Use grounds.

From an economic standpoint the southerly routes cost more to construct and maintain and intrude upon some of Nevadas most productive land, diminishing its profitability and ultimate potential.

From a social standpoint, the visual impact of power lines through the Humboldt meadows and valleys will be much greater than through more mountainous terrain where the topography can be utilized to diminish the visual impact. Also since many

#### T LAZY S RANCH

#### Exhibit II

#### SUMMARY OF NEVADA LAND STATUS

	<u>Acres</u>
Total Land Area (including lakes)	70,750,000
Less:	
Federal Land	61,550,000
Other Public (estimated)	500,000
Railroad (estimated)	<u>5,000,000</u>
Resulting Land Held by Private Individuals (about 5% of total)	<u>3,700,000</u>



**T LAZY S RANCH**  
BATTLE MOUNTAIN - NEVADA

January 24, 1977

047  
(c)

Mr. E. I. Rowland  
State Director  
Bureau Land Management  
Room 3008  
Federal Building  
Reno, Nevada 89509

Dear Mr. Rowland:

My letter to you of December 29, 1976 concerning Sierra Pacific Power Company's 230/345 kv transmission line from Oreana, Nevada to Hunt, Idaho contained an error which I would like to correct at this time.

In this letter, I incorrectly stated that only .5% of the land in Nevada had the soil and water resources for cultivation. The correct figure is 2%. This error is a result of the very limited time allowed by the BLM to respond to its Draft Environmental Statement.

Therefore, I would appreciate your correcting my letter as follows.

Page 5, paragraph 5, second sentence should read:

When only 5% of the land in Nevada is held by private individuals (see Exhibit II) and only about 2% has the soil and water resources for cultivation (according to the BLM study dated September 30, 1976, only about 1,400,000 acres have irrigation potential of which about 1,300,000 acres are already developed) it is difficult to understand how anyone could suggest that these scarcest of Nevada resources are to be sacrificed.

Page 7, paragraph 2, second sentence should read:

When such action also involves unnecessary condemnation of our scarce irrigatable land (less than 2% of the land in Nevada) we find this even harder to justify.

Although the above change does not alter the validity of the arguments or conclusions, we did not want to be accused of using biased information.

We appreciate your further consideration.

Very truly yours,

*C.B. Thornton*  
C. B. Thornton, Jr.

REPLY TO: BOX 232, BATTLE MOUNTAIN, NV 89820 - ASK OPERATOR FOR T LAZY S NO. 1  
BOX 7, BEVERLY HILLS, CA 90213 - (213) 278-6191



STATE OF NEVADA  
DEPARTMENT OF HUMAN RESOURCES  
ENVIRONMENTAL PROTECTION SERVICES  
CAPITOL COMPLEX  
CARSON CITY, NEVADA 89710

December 1, 1976

048

**MEMORANDUM**

TO: Bruce Arkell  
FROM: Dick Serdoz, Air Quality Officer  
SUBJECT: SAI NV #77800009 - Sierra Pacific Power Co. Proposal

Following are the comments on the above mentioned proposal from the Environmental Protection Services:

**Air Quality Control:** The Air Quality Section can support the various corridors in the descending order as follows: Highway, Adobe Range, Metropolis and last the O'Neil Basin. The basis for our classification is based on the material present in the EIS. The area of discussion is the amount of access and construction needs which will require disturbance of natural cover thereby creating a man-made dust problem for an indefinite period of time. The Highway requires the least, the Metropolis corridor requires 17% more, Adobe Range corridor requires 30% more, and the O'Neil Basin requires 54% more. The cost of right-of-way may, however, offset this advantage when it is considered, the least amount of right-of-way is O'Neil Basin, the Adobe Range requires 10% more, the Metropolis requires 13% more and the Highway requires 26% more. This same cost relationship is also compatible with the projected taxes. The only exception to this is that Elko County, which is outside of the service area, receives the greatest benefit from the Highway corridor. All of the corridors, except O'Neil, may reduce the amount of additional corridor for the Austin inter-tie at some future date, both for new corridor area and new road construction. One problem with the clearing of construction staging areas and access roads even if they are not used for maintenance of the line is that once the 10-foot wide path has been cleared during the summer months, the path may be widened through blowing soil depositing on the vegetation causing reduced growth. This would require a longer period of time for the new growth to cover the area, depending on the soil condition and location.

What is the applicant's plans for the removed brush, debris or other material if it is not to be burnt?

The EIS states the Sierra Pacific Power generator is 566 MW. This generation should be separated as to hydro-electric or fossil fuel fired with location for possible future inter-ties with this project. The other utility corridors proposed should be included as the selected corridor could be evaluated with a possible piggy-back on adjacent land thereby utilizing a utility corridor approach and not opening up more virgin land. The utility corridor approach appears to be implemented with the Metropolis and Highway corridors.

10-116



STATE OF NEVADA  
GOVERNOR'S OFFICE OF PLANNING COORDINATION  
CAPITOL BUILDING, ROOM 45  
CAPITOL COMPLEX  
CARSON CITY, NEVADA 89710  
(702) 888-4888  
January 11, 1977

048

Mr. E. I. Rowland  
State Director, Nevada  
Bureau of Land Management  
Nevada State Office  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Re: SAI NV #77800009 - Draft Environmental Impact Statement/Sierra Pacific Power Company Proposal/230/345 kv Transmission Line from Oreana, Nevada to Hunt, Idaho

Dear Mr. Rowland:

Attached are comments from the following affected State Agencies: Department of Fish and Game and Environmental Protection Services concerning the above referenced Environmental Impact Statement.

These comments constitute the State Clearinghouse review of this proposal, and we would appreciate it if you would incorporate these comments in your final Environmental Impact Statement.

Sincerely,

*Bruce O. Arkell*  
Bruce O. Arkell  
State Planning Coordinator

80A/cc

Attachments

cc: Department of Fish and Game  
Environmental Protection Services

Memorandum  
December 1, 1976  
Page Two

048

There is a question on population projections for Washoe County, as most of the State planning and related service requirements are based on the Washoe County Regional Planning Council's projections. If these projections were not used, a justification should be in the EIS.

The key ecological interrelationships, Fig. 11-6, should be re-evaluated because air quality is affected by temperature, precipitation, alkalinity, texture, percent cover, and mining. Temperature -- when you consider inversions. Precipitation -- when you consider cleaning the air. Alkalinity -- when you consider re-growth. Texture -- when you consider potential to recover. Percent cover -- when you consider potential to cause natural fugitive dust. Mining -- this has a major impact on localized areas and it is growing in the study area.

In Chapter III "Air Quality", a benefit may be to reduce or delay the need for additional fossil fuel generating capacity. An adverse consideration by the O'Neil corridor would be the opening of more area to off-road vehicle (OFV) access from the maintenance road. This may require additional BLM manpower to enforce needed OFV restriction.

The Report, Fig. 111-8, has an error in that slightly adverse is listed as "L" and should be "S".

The Report, Fig's H-5 and H-6, are showing annual usage and cannot be readily interpreted or related back to power generation or the effect this project has on the need to meet this demand. (Dick Serdoz)

**Water Pollution Control:** The Water Pollution Control Section feels the proposed construction of "Sierra Pacific Power Company 230-345 KV Transmission Line," from Oreana, Nevada to Hunt, Idaho, should follow the "Highway corridor". All other corridors proposed are unacceptable to this section, due to tremendous stresses put on streams and creeks.

Water quality in areas of construction would be highly impacted by large increases of suspended sediment concentrations. Also gas, oil and human waste could enter streams from equipment service areas. Long-term erosion would affect streams and creeks after construction sites are abandoned. Construction could cause streams to alter there course by disturbing channel bottoms.

The Highway corridor should have the least amount of impact on streams and watershed due to easy access from the highway. Large amounts of new road would not have to be constructed. By following the Highway corridor, disturbance would be held down to a minimum as compared to other proposed corridors.

What enforcement controls are available to assure that revegetation will be accomplished? Who determines "where soil and climate are favorable" for revegetation efforts? What are the types of plants to be used for revegetation? All storm runoff control devices (culverts, dams, etc.) should be maintained as an integral part of line maintenance. (Wendell D. McCurry)

**Solid Waste Management:** No comment. (H. LaVerne Rossa)  
pc  
cc: Frank Holzhauer



JAN 10 1977

March 24, 1976

Oreana-Hunt Team  
Bureau of Land Management  
P.O. Box 1751  
Reno, Nevada 89501

Gentlemen:

Reference is made to your request to notify your agency of the concerns relative to the four alternative transmission lines from the Oreana sub-station near Lovelock, Nevada to the Hunt sub-station near Twin Falls, Idaho.

It is suggested that the Highway Corridor route be followed since this route is already in existence. We see no advantage in the other alternatives, particularly the O'Neil Basin route which would only create an additional opportunity for the exploitation of populations as well as additional destruction of habitat.

Sincerely,

GLEN K. GRIFFITH, DIRECTOR

A. Jack Diwinger  
Assistant Chief  
Division of Fisheries

AJD:rb

Mr. I. E. Rowland  
State Director (N-911)  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

This is in response to your letter dated October 15, 1976, requesting comments by the Federal Power Commission (FPC) on the United States Department of the Interior, Bureau of Land Management's Draft Environmental Statement concerning the Sierra Pacific Power Company's (Sierra) proposed 230/345 kV transmission line and associated facilities from Oreana, Nevada, to Hunt, Idaho. These comments by the FPC's Bureau of Power staff are in accordance with the National Environmental Policy Act of 1969 and the April 23, 1971, Guidelines of the President's Council on Environmental Quality.

In preparing these comments, the Bureau of Power staff has considered the Draft Environmental Statement; related reports made by the Western Systems Coordinating Council; Annual Power System Statements submitted by Sierra, together with related information from other FPC reports. The staff of the Bureau of Power bases its evaluation of the need for a specific bulk power facility upon the load-supply situation for the critical load period immediately following the availability of the facility.

Sierra's proposed 230/345 kV transmission line project involves construction of approximately 320 miles of transmission line from Oreana, Nevada, to Hunt, Idaho; construction of a substation west of Valmy, Nevada; and upgrading of a terminal substation at Hunt, Idaho. This transmission line project will originate at the Oreana Substation and be routed in a generally northeasterly direction into the Hunt Substation in Idaho.



CHILTON ENGINEERING

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Section 202(a) of the Federal Power Act [16 USC §24 a(a)] establishes a mandate for the Federal Power Commission regarding assurance of an abundant supply of electric energy throughout the United States. This assurance is interpreted to mean both adequacy and reliability and the proposed electric transmission line project will have a significant impact on the adequacy and reliability of electricity supply in the Sierra's service area and that of neighboring utilities supplying geographic regions adjoining the applicant's system. The completion of this project will interconnect Sierra's system with that of Idaho Power and will have the capability to transfer 150 megawatts of power between the service areas of the involved utilities. This capability will increase to 250 megawatts when the proposed line is converted to 345 kV operation.

The proposed transmission line project will provide an additional source of electricity to satisfy the present and projected growth on Sierra's system. It will also provide an interconnection with Idaho Power System thereby resulting in increased system reliability. Other power system economic factors and stability considerations and reliability requirements also support the need for the proposed 230/345 kV line.

CONCLUSION

In view of the existing and planned generating capacity in Sierra's service area and the forecasted load growth, the Bureau of Power staff concludes that this transmission line addition to the bulk power transmission system is needed to maintain an adequate and reliable system in the Sierra area. The staff believes that an environmentally acceptable overhead line as proposed is preferred because of the technical and economic penalties currently associated with underground transmission lines.

Very truly yours,

*Jack L. Weiss*  
Jack L. Weiss  
Acting Chief, Bureau of Power

January 12, 1977

E. I. Rowland, State Director  
Bureau of Land Management  
Room 3008, Federal Building  
Reno, NV. 89509

Dear Mr. Rowland,

I have reviewed a report prepared by the T Lazy S Ranch concerning the proposed Adobe and Highway/Metropolis Corridors for the Sierra Pacific Power Company's 230/345 kV transmission line from Oreana, Nevada to Hunt, Idaho. I would like to offer my objection to the Adobe and Highway/Metropolis Corridor. I feel the T Lazy S Ranch report adequately demonstrates some of the concerns that should be expressed in adopting any of the Southern routes.

The Lander County Fair and Recreation Board is presently conducting a feasibility study for a recreational-irrigation reservoir on Rock Creek. The Adobe route would significantly impact the use of the irrigatable land within the Boulder Valley area that this potential reservoir would serve. Also, the Adobe Route would place the transmission line along the base of the Sheep Creek Range which is the potential recreational camp sites to be utilized in conjunction with the reservoir. Needless to say, this type of transmission line does not give the visual impact that would be desired with such a recreational facility.

The letter submitted by the T Lazy S suggests that the Highway-Metropolis corridors would be located in areas that have already been disturbed by man. I agree with the conclusion of the T Lazy S that this corridor may have the least visual impact of any of the corridors considered.

I appreciate your consideration of my objection to the Adobe corridor and will be available to review the potential reservoir with your agency at any time if it will assist you in your decision making process.

Sincerely,

CHILTON ENGINEERING

*Ira S. Rackley*  
Ira S. Rackley, P.E.

IR/cs



NORTRUST FARM MANAGEMENT, INC.

1610 Prudential Plaza  
1060 Seventeenth Street - Denver, Colorado 80202  
Telephone: (303) 534-4111

051

January 12, 1977

Mr. E. I. Rowland, State Director  
Bureau of Land Management  
Room 3008, Federal Building  
Reno, Nevada 89509

Re: Proposed Alternative Routes for Sierra Pacific Power Company  
230/345 kv Transmission Line from Oreana, Nevada to Hunt, Idaho

Dear Mr. Rowland:

This letter is to notify the Bureau of Land Management that Maggie Creek Ranch, Inc. is in favor of the O'Neil Basin Corridor for the above-referred-to transmission line, and strongly objects to the Highway Corridor, the Metropolis Corridor, and the Adobe Range Corridor.

This position is based on the following reasons:

REASON FOR INTEREST

Maggie Creek Ranch, Inc. is located in Elko and Eureka Counties, Nevada, and consists of approximately 177,000 acres. Slightly more than 126,000 acres of the ranch is deeded land. Of this, approximately 6,900 acres are irrigated, primarily from the Humboldt, the South Fork of the Humboldt, and Maggie Creek. The ranch is presently rated at about 5,500 animal units. There are 20 permanent employees and from four to eight seasonal employees. It is estimated that these employees spend between \$130,000 and \$140,000 of their net disposable income within the State of Nevada, the greatest share of this being in the communities of Elko and Carlin. This is about 25 percent of the gross expenditures of the ranch operation within the area. The combined real estate and personal property taxes paid by the ranch to Elko and Eureka Counties are substantial.

The ranch, its employees and its owners, feel a strong sense of involvement within the Northeastern Nevada community. This, quite naturally, generates a concern for the area now and in the future. The proposed transmission line constitutes a major change within the area. Just where it is located will have a marked effect on the permanent residents of the area for a very long period of time. Because of this, Maggie Creek Ranch, Inc. feels it must register its views on the project and ultimate selection of route for the line.

A wholly owned subsidiary of Nortrust Corporation, Chicago

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Mr. E. I. Rowland

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January 12, 1977

difference between costs presented in the Draft Statement and cost projections termed acceptable by Sierra Pacific Power Co. These differences, according to conversations held with Sierra Pacific personnel, range up to nearly 100 percent above those costs presented in the Statement. If there are revised, more accurate cost projections existing, then any comparisons between Corridors as to total cost or power cost to customers used in the Draft Statement are felt to be misleading, incomplete, and incorrect. We strongly urge the BLM to carefully review this highly important section of the Statement and use diligence in making certain their cost projections are complete and correct prior to making any decisions or rendering any opinions on the desirability of one Corridor over another.

In this instance, we would presume to caution those responsible for producing the Statement that mere cost of constructing the line itself in no way encompasses the total cost finally allocated to the line. We would urge a more careful and practical approach to projecting such cost segments as those dealing with: access roads, their actual length and construction dictated by terrain; restoration of disturbed areas based on actuality and experience rather than theory; acquisition of easements over private lands; and damage costs, both present and future, on private lands which can be attributed in any degree to transmission line construction and/or maintenance. We feel that factors such as these have not been fully evaluated prior to projecting costs of the line in any of the Corridors.

AFFECTED PEOPLE

It should be noted that throughout the Western United States, in particular, there is a strong feeling of sympathy and understanding for the very difficult role which has been forced upon the BLM in the past few years. As an agency, they have been unduly stressed from the standpoints of legality, policy, manpower, and budget with added responsibilities encompassing management planning and management control of the millions of acres under their administration. In such periods, time is short, deadlines are immediate, workloads appear monumental, and new guidelines and procedural improvisations must be utilized.

In the analysis of the effects of the four possible Corridors upon all of the various peoples who might be affected, the tone of the Draft Statement appears to develop a bias more in sympathy with periodic users of each alternate Corridor than it does for those segments of the population who will be affected by the changes in each Corridor day-in and day-out over the life of the transmission line. We refer here to the highly intricate and somewhat subjective procedural tool developed for measuring impact identified as visual resource analysis. We question the degree of accuracy and authenticity of conclusions derived from this application of visual sensitivity level criteria.

Mr. E. I. Rowland

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January 12, 1977

INADEQUACY OF BLM POLICY OF INFORMING AFFECTED PARTIES

There is a general inference in the Draft Environmental Statement prepared by the BLM that even though the general public and individual parties affected by this project were knowledgeable about the project, they showed very little reaction or interest in the matter. The Statement concludes this after pointing out that there have been few individual responses and only minimal participation at the hearings concerning the matter.

We contend that there would have been a much greater degree of input by the general public involved and the individuals affected if there had been a more conscientious effort made to directly contact and fully inform these parties as to the wide area of the estate affected and the substantial degree of impact imposed by the various routes suggested for the transmission line. Even though agency procedure may have been followed in informing both the general public and the individuals affected by the project, it is our feeling that the procedures of notification and fully informing as to alternative routes and their impact have been minimal and extremely subjective. An undated, form letter stating a Draft Environmental Statement is available for study and merely alluding to the possibility of more than one route hardly seems adequate in a matter having the major impact that this project does. Further, the release of this form letter hardly allowed sufficient time for any interested party to adequately study the matter and prepare an in-depth response. We feel that the governmental agency involved has clearly sidestepped its basic responsibility in serving the people by not fully informing them in this instance. We hope that in the future, this procedural policy will be improved.

COSTS OF PROJECT

In a social-economic period of constantly increasing costs and a steady rise in inflation throughout our country, we sense within the Draft Environmental Statement a callousness toward such factors as the much greater cost of each of the alternative Corridors assessed, and the subsequent increase in cost of power to customers for 50 years -- the estimated life of the transmission line. Possibly, the implied feeling is inadvertent editorializing on the part of the personnel involved in preparing the Statement, which is purported to be totally objective and factual. In any case, such implied subjectivity toward a national policy of curtailing costs and dampening inflation lessens the credibility of the Statement itself, and seems an inopportune stance for a governmental agency to take.

Costs presented in the Statement show that the O'Neil Basin Corridor is the least expensive route for the transmission line to follow. It is also stated that this route will result in less power cost to customers. However, it is understood now that there is a tremendous

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Mr. E. I. Rowland

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January 12, 1977

While we readily admit to inability to evaluate such a process from a technical or scientific standpoint, we sincerely feel the process itself includes too high a level of arbitrary and unconsciously personal assumptions and reactions on the part of those involved in developing criteria. Because of the recent development of the process, it would logically follow that very little practical application is presently available to actually verify the accuracy of the results. Therefore, it is felt that conclusions drawn from the application of this process to the actual and far-reaching impacts upon people should be utilized in decision-making with extreme caution, and in an experimental sense only.

We urge that a more objective and complete analysis of the impact of the four Corridors be made, covering all segments of the people who will be affected -- psychologically and economically -- by the installation and annual maintenance of the transmission line.

EXTENT OF IMPACT ON LAND

Regardless of the Corridor ultimately selected or the ownership of the lands affected, it is felt that insufficient consideration has been given to evaluating both immediate and future impact. In reviewing the Draft Statement, especially those parts dealing with construction requirements, access road requirements, actual degree of soil disturbance, and rehabilitation procedures, there is an underlying implication that there was only a small degree of field verification of facts presented and conclusions drawn. In general, it is felt that too many of the conclusions drawn were based on incomplete facts, theoretical textbook assumptions, rather than practical experience and actual verification of physical features within the four Corridors.

We feel that permanent and damaging impact upon the land both during the construction period and throughout the life of the line will be far more extensive than has been implied. Again, we urge that before any decisions are made, more extensive and comprehensive physical evaluations be made in each Corridor prior to developing conclusions and comparisons.

SPECIFIC IMPACT ON THIS RANCH

The O'Neil Basin Corridor does not affect property owned by Maggie Creek Ranch, Inc. However, each of the suggested alternative Corridors do go through deeded land owned by the ranch. The Adobe Corridor goes through the ranch for approximately 27 miles. Of this, approximately 18 miles would go over deeded land and 12 miles over land administered by the BLM and adversely-held deeded land. The Highway and Metropolis Corridors merge east of the ranch boundary,



Mr. E. I. Rowland

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January 12, 1977

051

then go through the ranch for approximately 31 miles. Of this, approximately 17 miles would go over deeded land and 14 miles would go over land administrated by the BLM.

Within the Adobe Corridor, approximately one-half mile would go over deeded land that is newly developed, irrigated alfalfa land. Within the Metropolis and Highway Corridors, because of the two-mile width of the corridors, it would be possible for the line to go over four to six miles of native, irrigated grass hay meadows. Portions of these grass meadows are in the process of being developed into alfalfa.

In the case of all three Corridors crossing over deeded range land owned by the ranch, damage to surface areas disturbed will be extensive and, for the most part, permanent. This is because of low rainfall, rough terrain for either construction or access or both, and a highly fragile native forage ecosystem. Because of this, we feel that any easement condemned over deeded land owned by the ranch will be far more damaging to the land surface than has been implied by the Draft Statement for this type of range land. This is influenced by the permanency of the damage, which we estimate to be total. The influence of the undesirable forage which will ultimately establish itself along parts of the easement will influence productivity of adjoining deeded range land. This does not even consider the extensive damage caused by unauthorized off-road vehicles in the entire area over the 50-year projected life of the transmission line.

#### CONCLUSIONS

While we acknowledge that there is just probable cause for the construction of a transmission line to provide more and higher quality service to western Nevada, as well as possibly to the Elko-Wells area, we feel that:

- there is justifiable cause to question the completeness and accuracy of the cost projections and cost comparisons presented in the Draft Statement;
- there is valid reason to believe that a noticeable lack of objectivity exists in considering the impact of all Corridors on all segments of the people affected; and that far too much weight is given to procedures of measurement of effect that are not proven, except in theory;
- through a number of circumstances and time stress, complete and accurate investigation of total impact to lands affected has not been made, nor has there been a practical and comprehensive assessment of probable damages attributable to line construction;

Mr. E. I. Rowland

-6-

January 12, 1977

051

- because of increased present and future costs related to the proposed transmission line if established in the Adobe, Metropolis, or Highway Corridors due to length, terrain, or greater percentage of deeded land required, it would appear economically capricious for the BLM to look upon them favorably.

We would like to express our appreciation to the BLM for letting us have this opportunity to express our view on this highly important matter.

Sincerely,

Maggie Creek Ranch, Inc.

By: Nortrust Farm Management, Inc.

By: *R. B. Hutchinson III*  
R. B. Hutchinson III  
Ranch Management Officer

RBH/ga

LANDER COUNTY FAIR AND RECREATION BOARD

BATTLE MOUNTAIN, NEVADA

052

January 17, 1977

Mr. E. I. Rowland  
State Director  
Bureau of Land Management  
Room 3008, Federal Building  
Reno, Nevada 89509

Dear Mr. Rowland,

The Fair and Recreation Board for Lander County has reviewed the proposed Sierra Pacific Power Company's 230/345 kilovolt transmission line from Oreana, Nevada to Hunt, Idaho. This project and the potential impact of several of the corridors under consideration will have an adverse impact on the project presently under consideration by the Lander County Fair and Recreation Board. Our project consists of a potential reservoir for recreational purposes on Rock Creek. The proposed dam site is on the lower portions of Rock Creek at its intersection with the Boulder Valley Flat. The reservoir itself will extend up the Rock Creek Canyon approximately four miles. The Fair and Recreation Board has under consideration a recreational development jointly owned by Lander County and Eureka County. The proposed adobe range corridor will pass within a half mile of our proposed recreation site. This will adversely impact the potential use of the recreational site and the Fair and Recreation Board would like to be on record as objecting to the adobe range corridor.

This Board has reviewed the letter submitted to you by the T Lazy S Ranch and concurs in its comments and recommendations. If you desire any further comments from the Lander County Fair and Recreation Board or the people associated with the proposed Rock Creek Reservoir development, please do not hesitate to contact me.

Very truly yours,

*Clinton H. Hinman*

Clinton H. Hinman, Chairman  
Lander County Fair and Recreation Board



Idaho  
Department of  
Fish and Game

GLEN K. GRIFFITH  
DIRECTOR

1100 VALLEY ROAD \* P.O. BOX 10678 \* RENO, NEVADA 89510 \* TELEPHONE (702) 784-8219

053

MIKE O'CALLAGHAN  
GOVERNOR

January 18, 1977

Mr. Ed Rowland  
State Director  
Bureau of Land Management  
Room 3008, Federal Building  
300 Booth Street  
Reno, NV. 89502

Dear Ed:

In accordance with Mr. Ed Filzey's request, attached is a copy of the Department of Fish and Game's comments to the State Planning Coordinator relative to the final Environmental Impact Statement on the Sierra Pacific Power Company's proposed transmission power line from Oreana, Nevada to Hunt, Idaho.

Sincerely,

*Glen K. Griffith*  
Glen K. Griffith  
Director

Enc:





STATE OF NEVADA  
DEPARTMENT OF FISH AND GAME  
1100 VALLEY ROAD, RENO, NEVADA • TELEPHONE 784-8214  
MAIL: P.O. BOX 10678, RENO, NEVADA 89510

053



GLEN E. GRIFFITH  
DIRECTOR

January 18, 1977  
IN REPLY REFER TO:

Mr. Bruce D. Arkell  
Planning Coordinator  
Governor's Office  
Carson City, NV. 89701

Dear Mr. Arkell:

Reference is made to the final Environmental Impact Statement relative to the Sierra Pacific Power Company's transmission power line from Oreana, Nevada to Hunt, Idaho.

It is suggested that the Highway Corridor route be followed since this route is already in existence. There appears to be no advantage to the other alternatives, particularly the O'Neil Basin route which would only create an additional access area creating disturbance and exploitation of wildlife populations that are already in jeopardy as well as additional destruction of habitat.

Sincerely,

*G. E. Griffith*  
Glen E. Griffith  
Director

AJD:vk

Sierra Pacific Power Company

GARY M. SOULE  
Senior Vice President

February 7, 1977

Mr. E. I. Rowland  
State Director  
Nevada State Office  
Bureau of Land Management  
300 Booth Street  
Reno, Nevada 89509

Dear Mr. Rowland:

This replies to your letter 1792 (N-911) requesting additional clarification concerning construction access on the Oreana/Hunt transmission line project.

Sierra's representatives, Harry Ericson and Jack Byrom, met with Mr. Ed Tilzey of your staff on January 28, 1977. The purpose of this meeting was to specifically review access road requirements. A discussion of the procedures used to produce the tables analyzing the total disturbed area for the various line routes proved that both parties use similar map analysis techniques to identify overland travel and construction access. However, the multipliers applied to the center line mileage for estimating access road lengths, differ significantly. Mr. Tilzey agreed that the disturbed acreage as shown on the chart prepared and issued as a part of Sierra's comments on the DES is reasonable and acceptable for the FES. We were requested to provide an estimate of graded access requirements so that the approximate mileage of overland trail where no blade work is anticipated can be calculated. This data will then be added to the table summarizing surface disturbances. The required data has been prepared and forwarded to Mr. Tilzey by letter of February 1, 1977 (copy attached).

Mr. Tilzey will address the differences between the DES and SPCC tables in the narrative of the FES. He will also point out that the DES table was based upon the probability of not using a helicopter during construction, and therefore, would indicate more disturbed acres. Our joint analysis recognizes the need for limited access and includes adjustments for helicopter use.

Your letter requested that we provide a base map with potential

P. O. BOX 10100 / RENO, NEVADA 89510 / TELEPHONE 702/788-4003



Mr. Rowland  
Page 2  
February 7, 1977

access locations identified. As indicated above, the results of the discussion with Mr. Tilzey show that we are both using similar base maps and data already. Therefore, the estimate of graded access requirements was assumed to satisfy your staff's needs.

We are certainly encouraged by your staff's positive attitude toward resolving the questions on the DES--particularly Mr. Tilzey's efforts and willingness to work with our staff to obtain the most accurate information possible.

Thank you for your time and attention to this important project required to provide an economical and reliable power supply for Northern Nevada. Please feel free to call if we can provide any further information or assistance.

Sincerely yours,

*Gary M. Soule*  
Gary M. Soule

GMS:ap  
Enclosure

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O

P

Y

850 INDUSTRIAL WAY  
SPARKS, NEVADA 89431  
(702) 334-6831

PRINCIPALS  
RICHARD W. ARGENT  
RONALD D. BYROM  
LARRY J. JOHNSON  
ROBERT B. SCHLES  
THOMAS E. TAYLOR  
THOMAS E. TRAMER

10-120

JOHN L. E.  
Secretary  
LARRY J. JOHNSON  
ROBERT B. SCHLES  
THOMAS E. TAYLOR  
THOMAS E. TRAMER

054

February 1, 1977  
Project No. 73340-A

Bureau of Land Management  
300 Booth Street  
Reno, Nevada 89509

Attention: Mr. Ed Tilzey - Oreana-Hunt  
Environmental Team Leader

Re: SPCCO Oreana-Hunt Project

Dear Ed:

In reference to our discussion last Friday, January 28, 1977, concerning the linear amount of overland versus graded access road per corridor, I have estimated those quantities and they are shown on the attached tabulation.

After determining the total length of graded access per route, I related those figures as a percent to the total route length. As a check on the whole process, measurements of the graded access on the Tracy-Oreana segment of this project were made, a total of 20.6 miles or 24% of the total centerline length required graded access. That figure times a factor of 1.1 to 1.3 miles of road per mile of centerline would allow a reasonable determination of the total length of graded access per route.

No attempt in this study has been made to differentiate between the amount of graded access road within or without the 140-foot wide right-of-way. In our recent survey of the Tracy-Oreana access roads on Federal lands, it was found that 8.87 miles of graded access fell outside of the transmission line right-of-way. This, of course, did not take into account that graded access within the right-of-way and also that access falling on private lands. If you have any questions pertaining to the procedures used in this analysis, please don't hesitate to contact me.

Sincerely,

S E A ENGINEERS/PLANNERS/ARCHITECTS

*Harry R. Ericson*  
Harry R. Ericson  
Vice President

HRE:nn  
Enclosure

cc: SPCCO (Jack Byrom-Prof. Engr.)

February 18, 1977

Mr. Ed Tilzey  
Bureau of Land Management  
300 Booth Street  
Reno, Nevada 89509

Dear Ed,

Per your request in our meeting on Monday, February 7, 1977, we are forwarding you this letter explaining the Company's position on construction requirements for the proposed Oreana-Hunt 230/345 KV line.

We will require the contractor to use a helicopter for the erection activities in those areas designated as "construction access". In these areas, which access roads will be flagged and approved by Sierra and the BLM, a reasonable road construction program will be allowed for the movement of equipment and men to install foundations and anchors. However, because of the limited road access, assembly and erection of towers will not be allowed at each structure site. This requirement will reduce the soil disturbance impact in these designated areas.

Areas of the line route designated as "overland travel" will not have the helicopter erection requirement. Because of the flatter or no slope terrain, other construction techniques should not significantly increase soil disturbance impact. The contractor will have the option as to type of construction technique.

Sincerely,

*Jack L. Byrom*  
Jack L. Byrom  
Project Engineer

cc: H. Ericaon  
R. Fagg  
File

JLB/gm

P. O. BOX 10100 / RENO, NEVADA 89510 / TELEPHONE 702/788-4011



## SUMMARY OF LAND REQUIREMENTS

AND	OREANA/VALLEY Graded Acres/Miles	VALLEY/STATELINE Graded Acres/Miles	STATELINE/HUNT Graded Acres/Miles	TOTAL
SURFACE DISTURBANCE				
GRADED ACCESS ROADS				
O'NEIL	14.5	48.3	6.4	67.2 mi. 280.9 mi. 24 %
HIGHWAY	22.1	51.0	6.4	79.5 mi. 349.8 mi. 23 %
ADOBE	14.5	55.3	6.4	76.2 mi. 311.5 mi. 24 %
METROPOLIS	14.5	60.2	6.4	81.1 mi. 319.0 mi. 25 %



United States Department of the Interior  
BUREAU OF INDIAN AFFAIRS  
WESTERN NEVADA AGENCY  
Stewart, Nevada 89437

IN REPLY REFER TO:  
Real Prop. Mgmt.  
308 - Winnemucca

APR 1 1976

Bureau of Land Management  
Nevada State Office  
Room 3008, Federal Building  
300 Booth Street  
Reno, Nevada 89502

Attention: Mr. Roger McCormick #1792.26 FF01 (N-911.5)

Gentlemen:

Your letter of March 26, 1976 asks if a conflict exists in the matter of the proposed Oreana-Hunt 230/345 KV transmission line in relationship to the tribally owned lands of the Winnemucca Tribe.

The legal description of the tribal lands of the Winnemucca Indian Colony is as follows.

- (1) NE 1/4 Section 32., T.36N., R.38E., M.D.M., Nevada  
SE 1/4 Section 32., T.36N., R.38E., M.D.M., Nevada  
320 Acres
- (2) N 1/2, NE 1/4, SW 1/4 Section 29., T.36N., R.38E.,  
M.D.M., Nevada  
20 Acres

In accordance to the map furnished showing the proposed facility within the "Highway Corridor", it appears that no Indian trust lands will be affected by the proposed alignment.

Sincerely yours,

*William C. Whipple*  
Acting Superintendent  
(William C. Whipple)



10-121



OFFICE OF THE DIRECTOR

United States Department of the Interior  
GEOLOGICAL SURVEY  
RESTON, VIRGINIA 22092

In Reply Refer To:  
DES-76/42  
Mail Stop 76D

APR 12 1977

## Memorandum

To: Assistant Director, Bureau of Land Management

Through: Assistant Secretary--Energy and Minerals

From: Director, Geological Survey

Subject: Review of draft environmental statement for Sierra Pacific Power Company's proposed 230/345 kilovolt transmission line, Oreana, Nevada to Hunt, Idaho

We have reviewed the subject draft environmental statement as requested by Mr. John Stephenson in a telephone call of April 4. The document was received April 5.

No mention of potential landslide or earth-slip hazards to transmission line towers or new access roads was found in the discussions of geologic hazards (for example, p. 32 and p. 36) or elsewhere in the statement. Areas considered to have a moderate to high landslide susceptibility or incidence are scattered within 30 miles of the Humboldt River, chiefly at the following places within the corridors that are under consideration for the proposed construction: (1) from S to 20 miles southeast of Rye Patch Reservoir; (2) in the vicinity of Golconda; (3) northeast of Battle Mountain, near North Battle Mountain and Stony Point; and (4) north and west of the Humboldt River from a point near Carlin to a point where the Adobe Range Corridor and the Metropolis Corridor cross the North Fork Humboldt River, 25 miles northeast of Elko. The foregoing areas are delineated more accurately on a recently published map entitled Preliminary landslide overview map of the conterminous United States by D. H. Radbruch-Hall and others: Miscellaneous Field Studies Map MF-771, U. S. Geological Survey, Menlo Park, California, 1976.

*J. H. Radbruch-Hall*  
Acting Director







## GLOSSARY



GLOSSARY

## GLOSSARY

acre-foot -	The amount of water necessary to cover one acre to a depth of one foot, equaling 43,560 cubic feet.
alignment -	The specific, surveyed route of a transmission line.
alternating current -	Electric current which reverses its direction of flow periodically (as contrasted to direct current).
alluvial fan -	A low, outspread, relatively flat to gently sloping mass of loose rock material, shaped like an open fan, deposited by a stream at the place where it issues from a narrow canyon or wash onto a plain or valley.
alluvium -	Clay, silt, sand, and gravel or other rock material transported and eventually deposited by flowing water.
ampere -	Unit of electrical strength.
Animal Unit Month -	Pounds of forage or feed required to sustain an animal unit (one cow or five sheep) for a period of 30 days. (Abbreviated AUM, AUMs.)
background -	That portion of the visual landscape lying from the middleground limits out to infinity. Color and texture are subdued in these areas, which are primarily concerned with the two-dimensional shape of landforms against the sky.
biome -	A major biotic community; natural groupings of organisms characterized by the occurrence of certain dominant plants and animals.
biota -	The plant and animal life of an area.
circuit -	A complete closed conducting path over which electric current may flow.
circuit breaker -	A switching device capable of opening an electrical circuit under abnormal load conditions.



- community - An aggregate of organisms which form a distinct ecological unit. Such a unit may be defined in terms of plants, animals, or both.
- critical habitat - Habitat of a limited nature, such as a deer winter range, which is vital to the survival of a particular species or population.
- conductor - A material, usually in the form of a wire or cable, suitable for carrying an electric current.
- cultural resources - Objects, structures, sites, and districts that pertain to native peoples or other communities; they are generally classified as either historic or prehistoric (archeologic). Such areas are of importance because of their educational, interpretative and/or scientific value, because they are vital to the preservation of a subculture, or because they are representative examples.
- current (electric) - The movement of electrons along a conductor.
- diurnal - Having a daily cycle (over a 24-hour period).
- double circuit - Two electrical circuits strung through a single tower structure.
- ecology - The study of the relationships of organisms or groups of organisms to their environment; animals and plants in their relation to each other.
- ecotype - A subdivision of a species that comprises individuals inter-fertile with each other and with members of other ecotypes of the same species but surviving as a distinct group through environmental selection and isolation.
- emergent vegetation - In water plants, those portions of the plant extending above the surface of the water.
- endangered species - (a) Federal regulation: any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the class Insecta determined by the Secretary of the Interior to

- constitute a pest whose protection would present an overwhelming and overriding risk to man.
- (b) State of Nevada regulation: any species whose prospects of survival and reproduction are in immediate jeopardy.
- environment - All that surrounds an organism and interacts with it.
- evapotranspiration - The total water returned to the atmosphere from the land by evaporation and by plant transpiration.
- fauna - Animal life of a region, period, or special environment (includes mammals, reptiles, amphibians, birds, fishes, insect, etc.)
- flora - The plant life of a region, period, or special environment.
- forb - A non-woody plant other than grass.
- foreground - That portion of the visual landscape lying generally from one-quarter to one mile beyond the viewer. Details of human-size features are visible at this distance, and all features are large scale elements.
- fugitive dust - Any dust particles which become airborne other than those being emitted by a stack or chimney.
- groundwater - That part of the subsurface water that completely saturates the rocks and is under hydrostatic pressure.
- guy - A strand used to balance the horizontal forces on a pole or tower.
- habitat - A specific environment which surrounds a species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.
- insulator - A device that is resistant to the conduction of electricity used for isolating and supporting conductors.



intertie -	A transmission line linkage joining two or more load systems or utility systems through which power produced by one can be utilized by the other.
kilovolt (kv) -	1000 volts (a volt is a measure of electrical potential difference which will cause a current of one ampere to flow through a conductor whose resistance is one ohm).
load center -	The point at which electrical loads of a given area are assumed to be concentrated for purposes of analysis.
middleground -	That portion of the visual landscape lying generally between the limits of the foreground (about one mile) to eight miles beyond the viewer. Overall patterns of vegetation and earthform constitute texture which is no longer distinguishable in human-size features.
megawatts (Mw) -	1000 kilowatts or one million watts (a watt is a unit of electrical power equal to 1/756th horsepower).
ohm -	Unit of electrical resistance.
perennial -	Enduring; reoccurring year after year with the seasons.
perennial yield -	The amount of groundwater which can be removed from a hydrographic area, each year without depleting the groundwater reservoir.
rare species -	(State of Nevada regulation): one that, although not presently threatened with extinction, is in such small numbers throughout its range that it may be endangered if its environment worsens, requiring a necessary close observation of its status.
raptor -	A bird of prey, such as an eagle or hawk.
riparian -	Vegetation related to or living on the bank of a natural watercourse or lake.
silicic -	Of, relating to, or derived from silica ( $\text{SiO}_2$ ).

- submergent vegetation - Vegetation normally covered entirely with water.
- substation - A station on an electrical power system with the purpose of routing and controlling electrical power and for transforming power to a higher or lower voltage.
- threatened species - (Federal regulation): any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
- volt - See kilovolt.
- voltage - The electrical potential or potential difference expressed in volts.
- watt - See megawatt.

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R'S CARD

3 1977

Power Company  
Mission Line

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(Continued on reverse)



